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1958 No. 8

Lobster and Crab Fisheries in Scotland

By H. J. THOMAS, B.Sc., Ph.D.

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Lobster and Crab Fisheries in Scotland

INTRODUCTION

"The catching of shellfish is an important element in the economy of the Inshore Fishing Industry [of otland]." This quotation from the Report of the Scottish Council on Industry (1946) repeats the findings previous investigating committees and lays emphasis on the importance of the lobster and crab fisheries Scotland. Notwithstanding this fact, the fishery has not been reviewed since the Buckland, Walpole d Young reports of 1877.

The annual catch of lobsters in Scotland for the years 1892 to 1924 is quoted in the Report on Lobsters the Interdepartmental Committee on Lobsters and Crabs (1926). This also gives particulars of the size mposition of the stocks, the sex ratios, and of hatching and spawning seasons. Some similar data in pect of crabs are published in the Report on Crabs made by the same Committee (1930). These blications relate to a period more than twenty years ago, and in addition touch only on a few aspects a subject which has featured on the remit of two committees set up by the Secretary of State for Scotland ce that time.

In view of the economic and social importance of the industry in Scotland, a review of the lobster l crab fisheries was undertaken. This work was principally carried out at the Marine Laboratory of Scottish Home Department, but has been made possible only through the most whole-hearted and erous co-operation of Fishery Officers and many representatives of the industry, both fishermen and rchants. To all of these the most sincere thanks are due.

In Scotland lobsters and crabs are found all round the coast, the former mainly in the coastal fringe or near rocky bottom beyond the low water mark and the latter outside the coastal fringe on sand or ngle with occasional patches of rock. They are caught in creels of varying types by men working in ts ranging from rowing boats to vessels of 55 feet in length and working from beaches, piers and bours depending on local conditions. The amount of fishing done depends to a large extent on the ssibility to a market and the adequacy of transport thereto. In some areas it is possible to store ters until suitable transport or a good market is available.

Details of the intensity of fishing, methods used and markets are given in the report both by District by methods.

MATERIALS AND METHODS

The coast of Scotland, for the purposes of administration by the Scottish Home Department, is divided twenty-two Fishery Districts (Fig. 1)[1], each under the supervision of a Fishery Officer. A District prises a number of creeks. Returns of the landings of fish of all types, in respect of each creek, are ered monthly by an appointed Fishery Correspondent to the District Fishery Officer. Details of the bers and values of both lobsters and crabs landed yearly in each District, collected in the above ner, have been published since 1892 in the Statistical Tables of the Scottish Home Department, erly (prior to 1939) the Fishery Board for Scotland. These publications also record the total number en employed in fishing of all types and the number of boats registered at each creek, classified under in broad headings.

Details of the landings of lobsters and crabs in respect of creeks, for the year 1949 and previous, have obtained from the records of Fishery Officers. In mid-1949 the system of recording monthly landings bsters and crabs was revised. A form (S.60) was completed monthly in respect of each creek, by the espondent, supplying details of the number of boats employed on creel fishing, subdivided into red and non-motored; the number of landings made during the month; the average number of s hauled per boat; the total catch (number) of lobsters and of crabs, together with details of the g grounds exploited. This form of recording has been continued up to date.

ce the time of writing, 1955, certain changes have been made and these are given, at appropriate places, in footnotes.

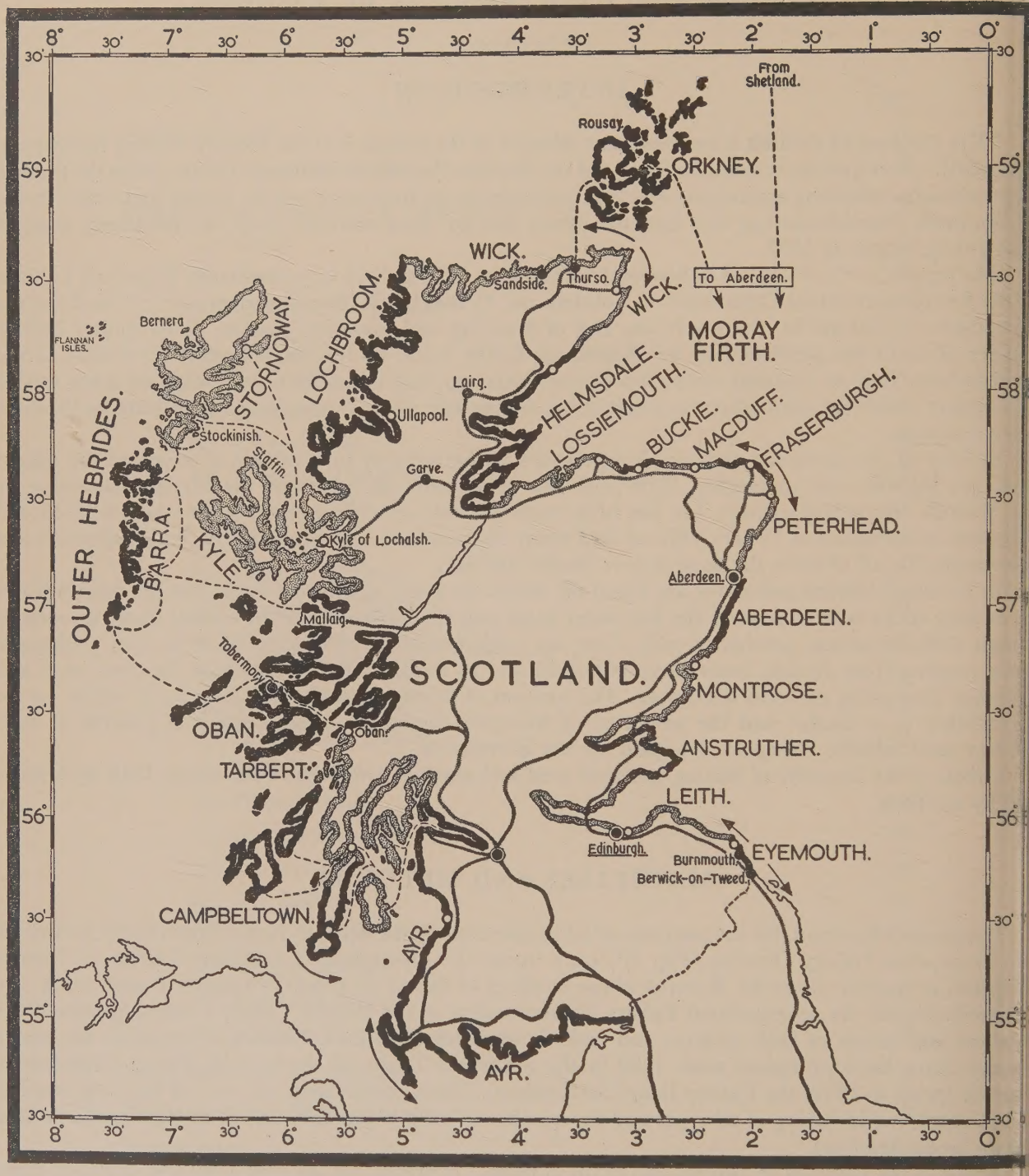

Fig. 1 The Fishery Districts of Scotland (1954) excluding Shetland, and the rail and steamer connections commonly used in marketing lobsters and crabs, together with railhead centres. Arrows indicate areas of strong tidal current. Stations where lobster and/or crab measuring has been carried out are also shown.

Supplementing these data, and in order to bring them into perspective, fishermen at each of the more portant creeks in all Districts were interviewed during 1952. In addition to confirming details derived m an analysis of the data supplied by Fishery Correspondents, information was collected from these hermen on their methods of working and marketing. Lobster merchants were also interviewed and their ocedures studied.

During the years 1931 to 1938 inclusive, a commercial lobster fisherman at Burnmouth and one at usay (Fig. 1) were commissioned to measure, throughout the season, a sample of about 2,000 lobsters, record the measurements to the nearest quarter inch and to classify the samples into males, non-berried nales and berried females. In 1938, the (Ministry of Agriculture and Fisheries and the Fishery Board Scotland) Interdepartmental Committee instituted new investigations and revised the form of cording observations. In addition to the information regarding length, sex, etc., details were requested the number of creels lifted and the number of hours since creels were set. Such observations were made ring 1939 at six stations around the Scottish coast, Burnmouth, Rousay, Sandside, Bernera, Staffin, d Tobermory. Collection of these particulars was discontinued during the war but was afterwards commenced, similar data being obtained during 1949 and 1950 at Burnmouth, Rousay and at Stockinish, arris (Fig. 1).

In addition, measuring and sexing of lobsters has been carried out at intervals by the staff of the arine Laboratory in the Eyemouth and Orkney Fishery Districts during 1951 and each subsequent ar. The co-operation of merchants has also been obtained, and lobsters from various grounds have, in s way, been measured at intervals. These records, together with the results obtained by the Fishery search Vessel *Kathleen*, which has prosecuted creel fishing during August/September each year since ptember 1948 in Orkney waters, have afforded data on the composition of the stocks.

FISHING EQUIPMENT AND PRACTICES

Creels

Creels, almost without exception, are made by the fishermen themselves. A typical Scottish creel ate 1) is described in "Practical hints for lobster fishermen" (Scottish Home Department, 1952). It sists of a strong, wooden, slatted base to which three vertical hoops are fixed. These hoops are held d strengthened by three battens, lashed, respectively, at the top centre and well up on each side. zelwood branches are usually used for the hoops, but in Orkney where these are not readily available, iron rod is employed. The framework is covered by netting which is, almost without exception, braided size and pattern.

The majority of creels in Scotland are constructed with two eyes, one on each side. In some areas, wever, single-eyed creels are preferred. This is particularly the case in Orkney. Single-eyed creels are t common on the east or north coasts of Scotland but constitute about a quarter of those used on the st mainland coast, and rather more in the Outer Isles. The single-eyed creel has an advantage over double-eyed in that it has a lower proportion of escapes. On the other hand, the single eye results in er lobsters entering the creel (Thomas, 1953). The average size of a double-eyed creel, used for ching lobsters on the Scottish coast, excluding Orkney, is about 27″ long by 18″ broad by 14″ high, d the inside diameter of the ring at the inside end of the eye is around $5\frac{1}{2}$″. Single-eyed creels have roughly ilar dimensions. On the other hand, a considerably smaller creel is employed in the Orkney Fishery strict, where the average size of single-eyed creel is about $20″ \times 17″ \times 13\frac{1}{2}″$. In the case of the double-eyed el the length is increased to around 23″. The average size of the ring of the eye is about $5\frac{1}{2}$″ in both es.

In Districts where the crab fishery is important, creels tend to be somewhat larger, having average nensions approximately 30″ long by 20″ broad by 15″ high, with an internal diameter at the inner l of the eye of roughly $5\frac{3}{4}$″. A larger creel is preferred in the case of crabs because they are caught in ater quantities than lobsters, and in some cases a smaller creel, by virtue of the crowding of crabs ide, may deter the entry of further individuals.

In the Orkney Fishery District the ring at the inner end of the eye of both single and double-e creels is made of galvanised iron wire, to which a hinged shutter is fitted. This apparatus is describe "Practical hints for lobster fishermen" (Scottish Home Department, 1952). A lobster, having entered creel is frequently thereby prevented from escaping through the eye. Similar ∩-shaped shutters occasionally found in other Districts, of which the most notable is Campbeltown where they are comm used together with single-eyed creels which predominate. In the Helmsdale Fishery District, the escape device consists of a complete hinged door of network, on a wire frame, covering the whole of inner opening of the eye. This fitting is found on a proportion of the creels in use. Whilst lowering percentage of escapes, such non-escape devices may deter lobsters entering the creel (Thomas, 19 Notwithstanding, as with single-eyed creels, there may be an advantage on balance where, due to weat conditions or other circumstances, creels are frequently left for more than twenty-four hours betw liftings. Whilst, in general, the ring at the inner end of creel eyes is round, with inside diameter betw the limits $4\frac{1}{4}''/6\frac{1}{2}''$, an oval eye is frequently preferred on the central and southern parts of the east co In the Fishery Districts of Leith, Anstruther and Montrose, it is common practice to omit the ring f the inner end of the eye. The edge of the braiding is left without a support and, being somewhat flexi thereby hinders escape. In other places, for instance Boddam in the Peterhead Fishery District, the in end of the creel eye may be affixed to a sleeve of rubber, 2″ long, cut from a motor-car inner tube. T being flexible, also impedes escape.

Whilst with such minor modifications, the above type of creel is the most common in Scotland, other noteworthy designs of traps are in use. In the southerly part of the Ayr Fishery District (the cr of Port William, Isle of Whithorn, Garlieston) a braided parlour-type trap is employed (Plate 2). dimensions of this trap are about 29″ long by 18″ broad by 14″ high; the diameter of the eye is $5\frac{1}{2}''$. trap, which is essentially two single-eyed creels in one, is divided internally into two sections. The si eye from the outside leads into one half, in which the bait is located. Having entered this, the lobste trying to escape, tends to take the path up the second eye within the creel leading from the outer sec into the inner part. Having done so, it is more securely ensnared. Parlour-type creels, working on principle, are commonly employed in the Nova Scotia fishery.

In the northern part of the Montrose Fishery District and the southern part of the Aberdeen Dist where there is a mixed lobster and crab fishery, the creels are not fully braided but are compose wooden slats (Plate 3). The eyes alone are netted. Crabs are held to be more destructive to twine than lobsters, and the slatted creels are preferred because they are more durable. These creels may have tops (Plate 3), or be similar in shape to the common Scottish type creel. Creels used exclusively in deeper water for crab fishing are invariably flat topped and larger ($36'' \times 22'' \times 13''$), with the two leading in one from each end. Creels used primarily for lobster fishing in shallow water, and on m lobster and crab grounds inshore, are round topped and smaller ($30'' \times 21'' \times 15''$), and whilst also b constructed in wooden slats, the two eyes lead in, one from each side in the same manner as with braided creels. Local fishermen hold that the end eyes facilitate entry and are an advantage in fishing crabs, which must enter the creel to reach the bait, but are less suitable in the case of lobsters wh by virtue of the long claws, are able to reach the bait without entering the creel completely.

(*b*) Boats

Boats of a variety of classes, of overall length between 12 ft. and 55 ft., are used in creel fishing ar the Scottish coast. The class of boat employed in a particular area is governed by a variety of factors most important of which is the availability of suitable harbour facilities. The Report of the Scottish Co on Industry (1946) states that there are many creeks in the Highlands and Islands where it is pos to use only rowing or sailing boats for lack of a pier, even though the creek provides a perfectly anchorage. There are also many creel fishermen who live on exposed parts of the coast where provi of harbours or piers is out of the question. These men use small boats because they have to haul t up the beaches daily. The location and suitability of harbours and anchorages around the Scottish c is given in the Appendix, Table I. The east coast of Scotland is well provided with first-class harb whilst in general the west coast, excepting the extreme south, the Outer Isles, Shetland, and to s extent Orkney, are poorly provided. Partly in consequence, on the east coast the greater part of the lob

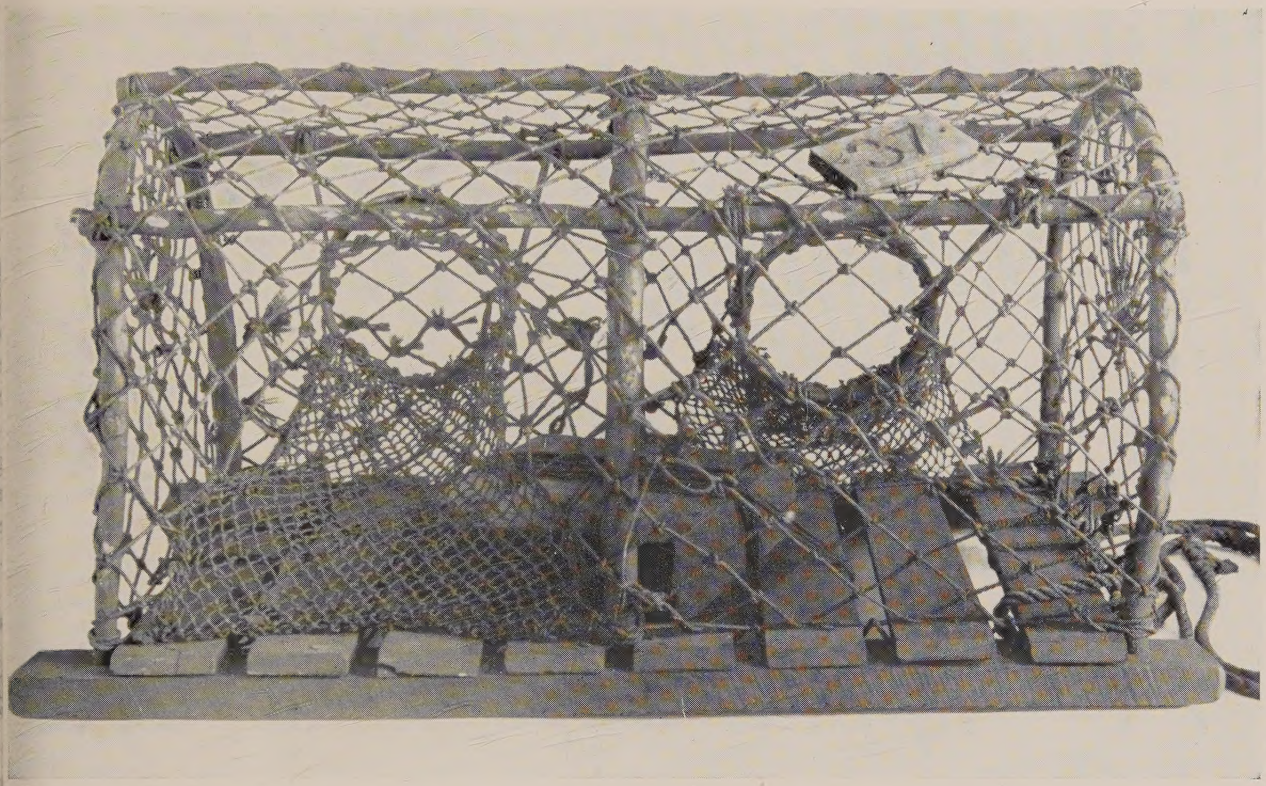

Plate 1 The creel, standard pattern.

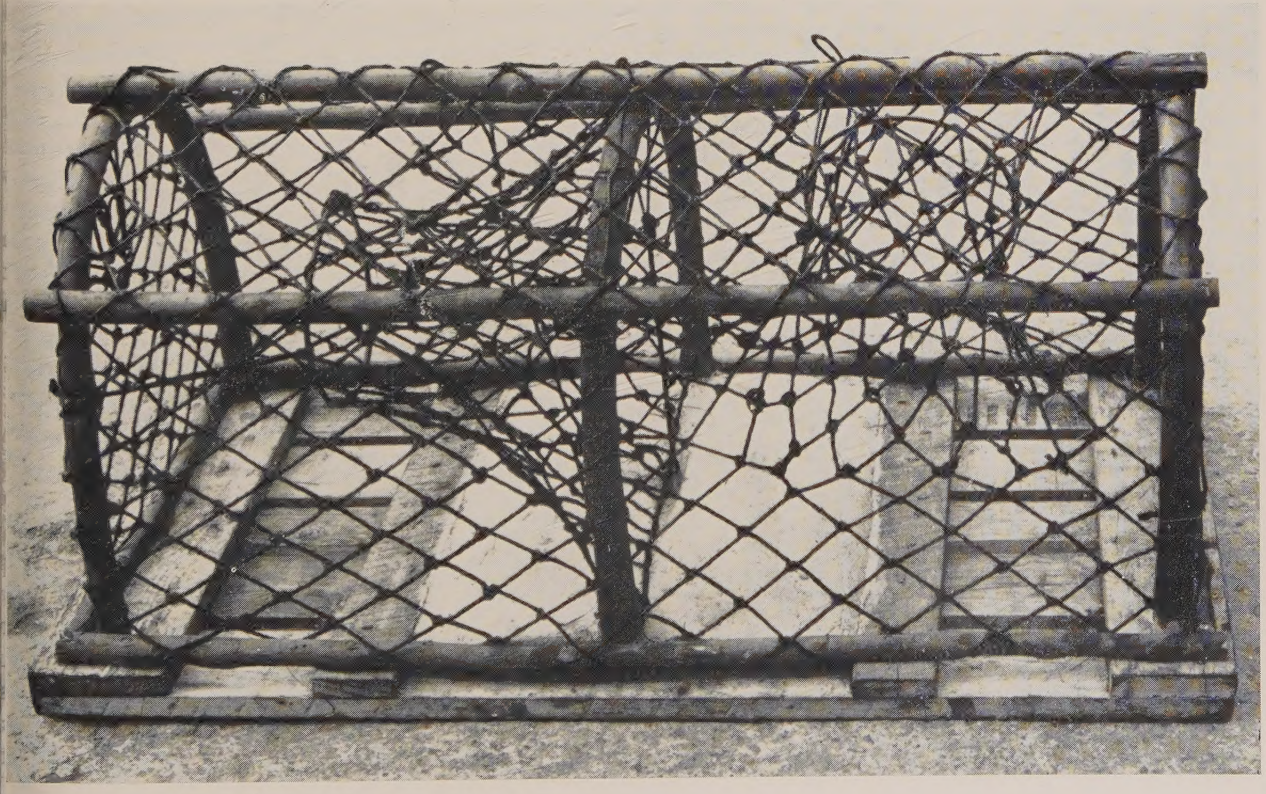

Plate 2 The parlour trap.

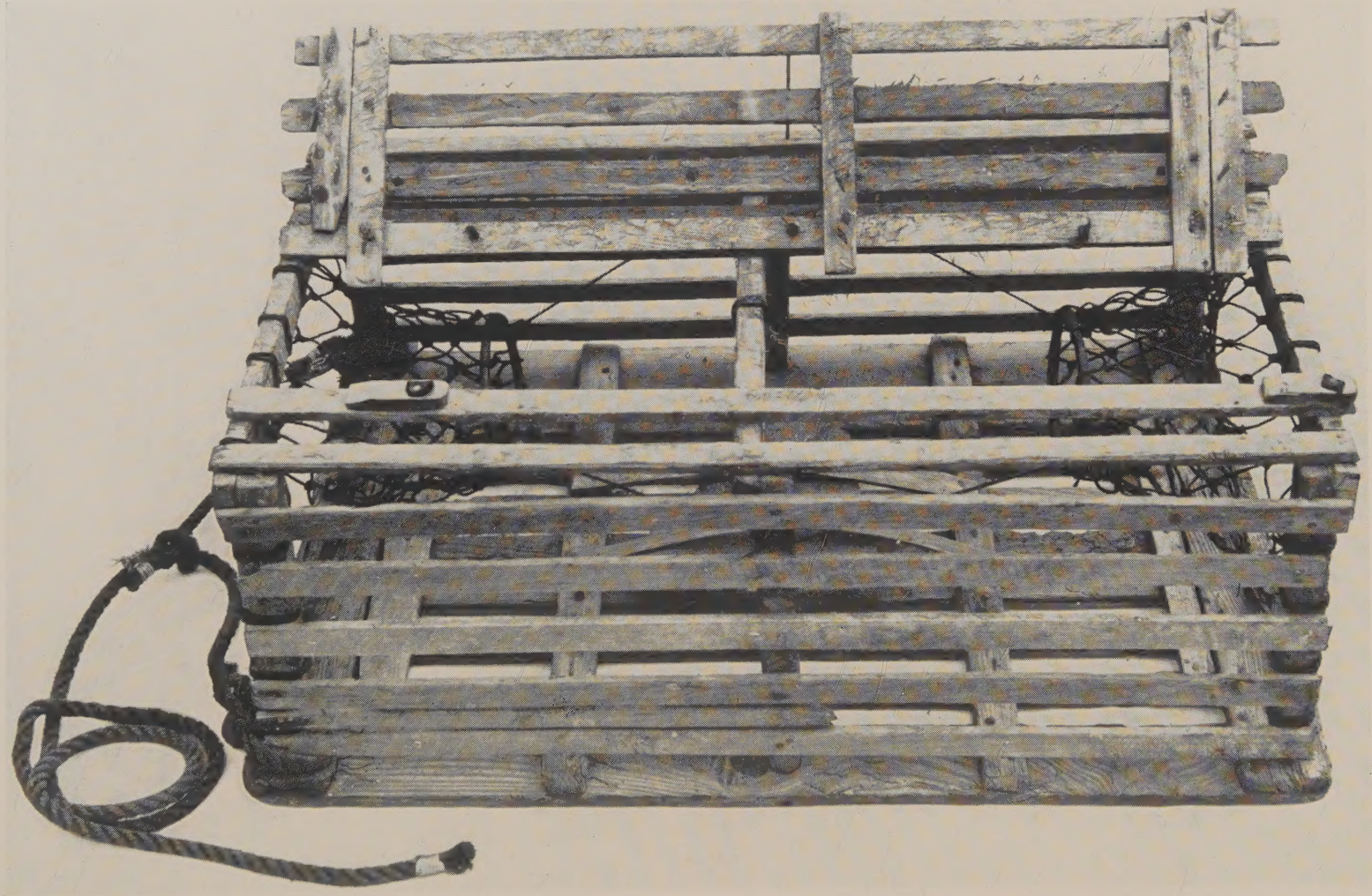

Plate 3 The slatted crab pot.

crabs are landed by motored boats of 20-35 ft. overall length whilst on the north and west coasts lings are made principally by boats of less than 20 ft., and often without inboard motor (Appendix, le II).

Similar fundamental geographical considerations are associated with the development, in recent rs, of a creel fishery by boats of 40-55 ft. overall length based on the ports of Kyle of Lochalsh and llaig. At certain seasons, about fourteen such boats undertake large-scale creel fishing, remaining away n base for periods of about a week and ranging the whole of the north west coast of Scotland, from apool to Oban and the Hebrides, including the west coast of the Outer Isles. In this way they are e to exploit stocks of lobsters which are virtually untapped by the small boats of the communities acent to the fishing grounds.

Whilst larger boats require harbours and anchorages, small boats are not restricted, and there exists hery by these craft from the ports of the east coast. These, in general, however, account for a relatively ll proportion of the total landings, and this fishing is usually prosecuted by part-time operators ing a shore job, or, alternatively, by older men who supplement their income in this way. Such e-time working is very seasonal. In general it can only be prosecuted in the light mornings and nings, and this is a principal factor limiting such fishing to the summer months.

Larger boats, of 25 ft. upwards, are manned almost invariably by whole-time fishermen, who therefore lominate in the creel fishery of the east coast and of the south-west of Scotland. A similar situation uns in the ports of the west coast and the islands. Outside the harbours in these latter areas, creels almost entirely worked by crofters who dovetail fishing activities with their agricultural pursuits. he case of most crofting communities the size of boat is limited by the lack of harbours. Even were not the case, however, the crofter is unlikely to adopt the larger boat. He is essentially a part-time rman, and in consequence the capital outlay on a larger boat is not justified. In this connection it is resting to observe that where crofters have acquired larger boats they have turned from crofting and me, to a large extent, full-time fishermen. The Fishery Districts of Helmsdale, Wick, Loch Broom, e, Oban, Campbeltown, Tarbert, Stornoway, Barra, Orkney and Shetland (Fig. 1) are considered ially to cover the crofting communities.

The fishing season is, to some extent, governed by the size of boat in so far as adverse weather restricts ng to a greater extent in the case of small craft. This is especially applicable in those places where boats e to be drawn up on to the beach. Thus, whilst the larger vessels on the relatively sheltered east coast ate all the year round, the smaller ones on the exposed parts of the west coast are unable to continue ng much after the end of October, and conditions are not again safe for launching until about April May. In addition, due to the high mortalities sustained in transit from isolated places during warm her and to the shore requirements of crofting, there is often a season of reduced fishing activity during ummer. In consequence, in such areas, the period during which creels are operated is very limited. n general, the size of the boat determines the whole nature of the fishery.

Methods of Operation

Small boats of about 14-18 ft. overall length, such as are commonly employed on the west coast of land and the Hebrides, as well as elsewhere by older and part-time creel fishermen, are restricted to ng waters near a base. Such boats may be hand-pulled but are more frequently fitted with an outboard or, thereby somewhat increasing their range. They are often worked single handed. This is especially ase on the east coast; elsewhere it is more usual to have two of a crew. The advantage of these small s, especially on rocky coasts, is their ability to work close inshore. On the other hand, it is not usually ticable to work more than about 20-30 creels, or to shoot in depths beyond about ten fathoms. hermore, being at the mercy of the weather to a greater extent than bigger boats, in most areas their ng season is restricted.

oats of more than 20 ft. overall length, especially if equipped with inboard motors, have a wider e of grounds, can fish more creels and operate for a longer season than smaller vessels. Open craft ft. are usually worked by two men. This is the size commonly used and boats of this category are oyed, together with small craft, in the crofter fishery. Elsewhere they are also used by full-time rmen, or seafarers, who turn seasonally to creel fishing.

Larger, half-decked motored boats of about 30-35 ft. are the craft of the full-time creel fishermen w may, however, also employ the boat for other fishing. The most frequent alternatives are handlines the ripper; these are often worked together with creels. Some fishermen using this class of boat bring th gear ashore with the advent of adverse weather, and work handlines, cod-nets, or even a seine-net in case of bigger boats. Vessels of this size are usually manned by two or three full-time fishermen, worki in all, about 200 creels. The crew must be active. Older men generally leave this class of boat in fav of some smaller craft. A harbour is almost essential for these boats.

A few boats of 34-45 ft. overall length are also used by full-time creel fishermen. With a crew of th or four, these boats work offshore and seldom in depths of less than about 1½ fathoms. They concent on fishing a large number of creels. Craft of this type are in use in the Eyemouth District, on the coast of the Wick District, at Kyle of Lochalsh and Mallaig. Recently, this class of fishing has also b prosecuted in the Stornoway Fishery District. These bigger boats, equipped with living accommodat and mainly fully decked, are suitable for cruises of a week or more. Those working from Kyle of Locha and Mallaig have regularly been used in this manner.

Vessels of over 45 ft. are not at present much employed in creel fishing. Other uses, in general, pr more profitable. On the other hand, in certain years as circumstances dictated, ring net boats of 45-55 based at Mallaig and Kyle of Lochalsh, have undertaken lobster fishing during June, July and Aug prior to commencement of herring fishing in the Minch. Manned by four or five men, these boats un take weekly cruises and work all grounds bordering the Minch and also the west of the Outer Is Except for the above mentioned ring-net boats, most creel fishermen work in families, owning their craft, but some of the larger vessels are owned by one member of the crew and profits are shared.

Creel fishing can readily be taken up at intervals, and for this reason the fishery includes a consider number of men who, to varying extents, follow other occupations. The ring-net boats, for exam prosecute creel fishing for two to three months in the summer. In remote areas the main seasons crofter fishermen, unless further curtailed by adverse weather, are April to June and Septembe December. Some fishermen from the Moray Firth, sailing in drifters during the herring season, tak creel fishing at other periods. In Shetland lobster fishing may occupy the interval between wha cruises. On the east coast, men with shore work often fish 10-20 creels during the summer, as long as l permits. In consequence there is a considerable seasonal fluctuation in the number of boats employe creel fishing (Table I).

TABLE I

The number of boats engaged in creel fishing and the landings, in thousands, of lobsters and crabs for each month, by coasts, for Scotland during 1954

	East Coast			West Coast			Orkney and Shetland			Overall		
	Number of Boats	Landings		Number of Boats	Landings		Number of Boats	Landings		Number of Boats	Landings	
		Lobsters	Crabs		Lobsters	Crabs		Lobsters	Crabs		Lobsters	C
January	65	3·4	107·6	43	7·1	4·5	15	3·2	—	123	13·7	1
February	62	3·5	114·9	44	7·0	5·7	12	1·7	—	118	12·2	1
March	75	12·6	135·9	53	11·7	3·4	14	3·2	—	142	27·5	
April	133	23·4	286·1	76	25·6	1·7	24	6·8	—	233	55·8	
May	151	24·1	397·2	95	32·9	3·1	46	19·9	—	292	76·9	
June	164	15·3	474·2	106	42·2	7·4	67	27·5	—	337	84·9	4
July	166	17·3	438·1	101	48·8	12·8	44	15·3	—	311	81·4	
August	186	56·2	343·7	117	66·8	17·0	58	23·1	—	361	146·2	
September	193	117·4	250·2	125	49·8	61·6	69	27·7	—	387	194·9	3
October	155	60·5	228·3	96	27·6	107·4	48	15·8	—	299	103·9	3
November	95	26·2	166·0	91	18·1	98·0	29	7·1	—	215	51·4	2
December	60	5·1	104·7	66	10·6	43·0	16	3·2	—	142	18·9	1

The general practice is to lift creels once daily, but safety considerations in bad weather curtail to a greater or lesser degree, dependent on the exposure of the grounds, the depth of working and

rness of creels to the rocks, as well as the nature of the coast and bottom. When practicable, it is tomary to lift creels in the morning. This, in most areas, has the advantage of catching the day's rket or transport. Generally, creels are re-baited at this lifting, but in some Districts, for example lmsdale, fishermen find that when creels are left fishing throughout the hours of daylight, the bait onsumed by vermin before dark and this reduces the profitable catch. In these areas the practice in mer is to lift creels twice daily. The catch is collected in the morning and the creels are lifted again the evening for re-baiting. So long as light permits, some fishermen, especially in crofting areas, lift els twice or even thrice daily, re-baiting on each occasion. Thereby more lobsters are caught per day. is procedure is probably especially worthwhile on the west coast rather than on the east, due to ater population densities on the former. Lifting twice daily is generally practised by boats engaged in ing cruises of a week's duration. These aim to work prolific grounds and are restricted in the number reels by the carrying capacity of the boat. It is customary to bring creels back to the base at weekends. some grounds, for example the Flannan Islands (Fig. 1), where, due to distance and exposure, the ster stocks are very lightly exploited and are dense, it is usual for the occasional visiting boat to work nd the creels lifting continuously. In such cases the duration of each fishing may be as short as about e to four hours.

In certain Districts, tidal currents restrict the period at which creels can be lifted and also limit the nber of liftings per day. A strong current will catch the float lines running from creels to the marker ks or buoys carrying them beneath the surface. Creels can therefore be lifted at around slack water y. This applies especially in the Districts of Peterhead and Fraserburgh, and the north-east of the k District. It also applies in other areas, although to a lesser extent, in particular the south-east coast Scotland and the south of the west coast of the Ayr Fishery District (Fig. 1). Fishermen with local wledge make use of the currents. For example, men from Stroma Island in the Pentland Firth when ing off Hoy or the north mainland coast, run out from Stroma on the west-going tide, being carried h the ebb, lift their creels around slack water and run back with the tide on the flow. The tide imposes striction on the time of lifting by larger boats fishing daily from the half-tide harbours as on the east ttish coast (Appendix Table I).

Where creels are being worked on local grounds, the general practice is to fish them for several nths unless prevented by damage or weather. Creels are brought ashore only at about three-monthly rvals for servicing, clearing away the marine growths, drying, tarring, renewing ropes, and, where essary, fitting a new braided cover. In certain parts of the north and west coasts, however, creels are ught ashore from Saturday to Monday each week.

Lobsters and crabs are both caught by means of creels. However the fishery in Scotland is principally cted to the capture of lobsters. In the western islands, Orkney and Shetland, where crabs are taken he lobster grounds they are generally rejected, a few only being landed for local use. The same largely lies on the north coast west from Thurso, and the whole of the west coast of Scotland except the ery from the Kyle of Lochalsh. Crabs captured by boats fishing for lobsters from Kyle are marketed , in addition, three boats from a nearby creek, in season, work crab grounds exclusively. This fishery expanded recently with the development of the market provided by the recently established processing nts at Thurso and Berwick-on-Tweed, with which places there is a railway connection. During 1954 milar development occurred in the fishery from Mallaig (see also pp. 51 and 56). The establishment he plant at Thurso also resulted in a considerable increase in the previously existing crab fishery off east coast of Scotland north from Wick, where certain boats now work exclusively on crab grounds. thermore, crabs captured in the fishery for lobsters in the southern part of the Wick Fishery District on the north coast grounds east from Sandside are also landed. Crabs do not travel as well as lobsters hat a commercial fishery depends on a readily accessible market. Crabs are captured on the west and th coasts, but the development of this fishery is handicapped by the lack of quick communications. east coast is not so restricted and, to some extent, creels are worked for crabs on the greater part of coast from Berwick-on-Tweed to the Moray Firth. Generally the fishery is mixed, with the emphasis ng on the capture of lobsters. However, in the Districts of Fraserburgh, Peterhead, Wick and Eyemouth, hat order, a proportionately greater income is derived annually from the sale of crabs than lobsters ble II). In these areas, in the appropriate seasons, a part of the fleet works exclusively on the crab

grounds. Crabs are marketed in other areas of the east coast and often have a significant bearing on th fishing methods adopted.

TABLE II

Landings (values) of lobsters and crabs, respectively, for the Fishery Districts on the east coast of Scotland, and the totals for other coasts during 1954

	Crabs £	Lobsters £	Total £
Eyemouth	31,699	17,146	48,845
Leith	11,101	11,596	22,697
Anstruther	6,592	10,023	16,615
Montrose	2,677	7,919	10,596
Aberdeen	1,930	797	2,727
Peterhead	3,687	1,174	4,861
Fraserburgh	16,096	2,504	18,600
Macduff	1,447	1,323	2,770
Buckie	36	1,221	1,257
Lossiemouth	58	1,492	1,550
Helmsdale	24	1,513	1,537
Wick	14,686	6,840	21,526
East Coast, total	90,033	63,548	153,581
West Coast, total	14,092	81,911	96,003
Orkney and Shetland, total	65	34,341	34,406
All Scotland	104,190	179,800	283,990

On Scottish grounds lobsters are usually worked on the stony and rocky coastal fringe at depths less than about 12 fathoms, although this varies from one district to another. Crabs, on the other ha are taken principally at depths beyond this, commonly out to 20 or 30 fathoms, where the rocks interspersed with sandy patches or on the sand or shingle beyond the rocks. Exceptionally in some plac crabs are worked up to depths of 80 to 100 fathoms, for instance, on the grounds north-west fr Fraserburgh. Lobster fishermen working close inshore with a small boat of up to 20 ft. can readily creels singly, by hand, from about 5 fathoms or less. At depths greater than this, such lifting becom slow and arduous. The outer grounds are therefore more usually worked by bigger boats, often equipp with a mechanical creel hauler. When working for lobsters at 5 fathoms or less, many fishermen find worthwhile to site creels, individually, in positions which they consider particularly suitable for lobste Whilst this is a slow process, it may yield good results, especially on patchy ground or in shallow wa of less than 2 fathoms. The practice is usual when fishing with small boats in Orkney, on the north a west mainland coasts and in the western isles, in all of which areas the numbers of creels worked per b are few. On the east coast it is only occasionally practised even by small boats and it is not very suit to fishing by larger craft. With the latter a better overall yield is obtained by working the maxim possible number of creels. Boats of over 20 ft., working in depths of 2-12 fathoms, whilst choosing a li bottom in a general way, shoot their creels largely at random. In all cases there is a balance to be str between the care taken in siting and the number of creels fished. The deeper the water the less advantage derived from careful siting and the greater is the emphasis on number.

Fishing in fleets of creels, namely with a number of creels attached to a long groundrope, "messenger", as described in "Practical hints for lobster fishermen" (Scottish Home Department, 195 is the method usually adopted in order to increase the number of creels, since less effort is required hauling. This further limits the possibility of accurate siting, since individual creels are at a predetermin separation along the ground rope. Ideally, for this type of fishing, the bottom should be fairly uniform order that creels will lie on suitable ground and the groundrope will not become fast on rocks. Suitab

nditions are not uncommon on lobster grounds, and are a characteristic of good crab grounds. This ature, together with the greater facility with which fleets of creels can be worked in deeper water, akes fishing in fleets normal practice for boats working primarily for crabs. However, in the lobster hery also the method is generally practised by boats of over 25-30 ft. and, on the east coast, by a oportion of boats of 18 ft. upwards.

Lobsters are fished in deeper water, 5-12 fathoms, in the spring and autumn. They extend into shallow ter in the summer. At this season fishermen with boats of 12-15 ft. prefer to work amongst the rocks tween low-water level and 1½ fathoms. Creels may even be exposed at low-water springs. This fishing ideal for placing creels in selected spots. On the other hand, neither the style of fishing, nor the boat, so well suited for working the deeper waters when the lobsters are offshore. In Orkney and many ier of the crofting Districts it is common for fishermen to use two boats, working the small one close hore during the summer and a larger boat of 20-25 ft. at other seasons.

Creels shot in shallow water are more liable to sustain damage than those shot further out. Seasonal ather conditions, as well as the offshore movement of the lobsters, require creels to be worked in the per water except during the summer. When worked in fleets, creels can conveniently be moved to ferent depths, since only the two end ropes of the fleet require adjusting. Using this method, fishermen erate to suit the conditions, moving to deeper water in anticipation of bad weather and *vice versa*. is practice lessens the loss of gear and affords safer working for boat and crew. It also permits more ular fishing. Where this method is prosecuted all year round, the deepest water is invariably worked winter when boats operating in an area of mixed lobster and crab fishing will often move off the lobster unds to work the safer bottom in 25-35 fathoms.

In addition to shifting creels in relation to changes of weather, fishermen move their creels in quest mproved catches. In this respect there is a difference between the lobster and crab fisheries. Apart n the relatively small inshore movement of lobsters in summer, tagging experiments have shown t lobsters do not undertake extended migrations (Thomas, 1955). Crabs, on the other hand, are stantly moving and undertake considerable seasonal migrations (Meek, 1905). For this reason, provided els are located on suitable crab grounds, there is little or nothing to be gained by shifting the creels. fishing for crabs it is usual to haul the creels, re-bait and shoot again on the same ground. In the e of lobsters, on the other hand, creels quickly fish out the surrounding population and, in consequence, the practice to shift frequently to new grounds. Most lobster fishermen re-shoot the creels in roughly same place if the catch has been good. However, they also change the site systematically. In working oast, providing it is all suitable for lobsters, a common practice is to work along the stretch. Every or so a certain number of creels are moved from the one end to new ground at the other end. In this ', at anytime, fishing is confined to one area, which is a convenience. On the other hand, where unds are "patchy", a particular local stretch will be fished, moving each creel a yard or so daily, for eek or fortnight until the catch falls off. The batch of creels is then lifted and moved elsewhere. In ricts where the patches of suitable ground are small, it may be necessary to work creels in two or e more or less widely separated batches. The extent of shifting of creels and the methods adopted dictated by the catch and the nature of the bottom.

The extent of grounds suitable for creel fishing varies considerably from one coast to another, as also the season at which the areas can be worked. Where the bottom shelves steeply, such as off the east ie Outer Hebrides, Shetland and much of the west coast of the Orkney Islands, as well as in general nd all headlands, the fringe suitable for lobster fishing is narrow and can conveniently be exploited by fishing single creels, generally from a small boat. In such areas, particularly where they are sed to the open ocean, such as on the west of Hoy, and the north mainland coast, fishing can only ndertaken in the very favourable weather, except within the shelter of lochs where these are present. grounds, therefore, have a very restricted and intermittent season. Off the west of the Outer Isles the southern half of the west mainland coast, the bottom shelves much more gradually and provides ge workable area although the fishing season is curtailed due to the exposure. This latter effect is ntuated by the small size of boats generally in use. In many cases these lobster grounds are suitable orking fleets of creels. The wide coastal fringe and the shelter afforded on the east coast of Scotland the optimum physical conditions. Fishermen find that if the water is too clear and calm, the catch

is reduced. Offshore crab grounds are present in most districts although they are mainly exploited of the east coast. Elsewhere the absence of readily accessible markets largely precludes fishing.

In the crofting Districts the number of fishermen on a stretch of coast is small. In most areas there ar ample grounds for all to work in the shallowest water with the small boats so long as weather permits Elsewhere, on the other hand, the intensity of effort usually makes it necessary to exploit the offshor grounds in addition to the immediate coastal fringe. In depths of more than 5 fathoms it is usual to wor fleets of creels from boats of 20 ft. or over. Boats of around 20 ft. often shoot some single creels, close in together with small fleets of 5-10 creels on the outside grounds. The bigger craft of 25-35 ft. generall operate in depths of more than 2 fathoms and only use fleets. The majority of such boats are equippe with a mechanical creel hauler which, especially when fishing with fleets, greatly increases the numbe of creels which can be worked. Whilst, however, it is possible for two men to work a 30 ft. boat whe hauling by hand, a crew of three is more convenient when using the mechanical hauler. Boats workin crab grounds, being in deeper water, almost invariably use a hauler powered by the boat's engine.

Creels are constructed with a sinker. This usually consists of a stone lashed into the bottom of th creel (Plate 1). An alternative method is to cast the sinker, in concrete, into the wood framework of th bottom (Plate 2), as practised in some parts of the Orkney and Ayr Fishery Districts. The latter metho is more convenient and avoids lashing ropes, which tend to rot and fray. In fishing single creels, whic may often be shot in an exposed position, the weight of each must be sufficient to anchor it. Generall speaking a heavier sinker is needed in shallow water. When creels are fished in fleets, each trap is hel by the groundrope. Provided this is straight, reasonably stretched and securely held at both ends, eithe by heavily weighted creels or by a suitable stone or anchor, sinkers in the intermediate individual cree can be very much reduced in weight. This applies especially in deeper water. It is common practice i the Eyemouth Fishery District. The method facilitates hauling thereby increasing the number of cree which can be worked. Fleets of creels can often be fished in areas of strong tidal currents such as woul in practice, prevent the use of single creels.

The number of creels used in a fleet depends on the nature of the grounds, the size and equipme of the boat and the number of the crew. The latter factors are, in large measure, a function of the fir namely, the nature of the grounds. In most areas of the east coast, a 30 ft. boat with mechanical cr hauler and three of a crew can readily work 50 creels to the fleet when fishing crab grounds. This le is also attainable on mixed lobster and crab areas where the bottom is made up of long, relatively f stretches, such as in the Eyemouth Fishery District where the rocks are of a broken-up slab-like formatio On the other hand, when working for lobsters on "patchy" ground the lengths of fleets are limited by t dimensions of the patches. In any such case the maximum number of creels per fleet will depend up the depth. When using fleets it is customary to allow a separation between creels equal to the depth working. In this way, at hauling, only the weight of one creel has to be lifted. Where a mechanical haul is used, the minimum separation may be set at somewhat over half the working depth. "Patchy" lobst grounds are mostly fished by boats of 20-30 ft. crewed by two or three men working fleets each of 10-2 creels. Fleets of 5-10 creels are sometimes adopted by fishermen working single handed or in pairs fro boats of about 20 ft. without a mechanical hauler at depths of 2-7 fathoms.

A generalised summary of the number of creels worked by various sizes of boats and per man is giv in Table III. The data are averages and are subject to considerable variation in particular cases (s also p. 73). Part-time fishermen work fewer creels, about 20 or less, and 30 at the most. They also usu work single-handed. The number of creels fished per boat in winter is generally less than in summer.

The number of creels which can be worked from a boat depends to a considerable degree on t extent to which creels are moved. Thus vessels fishing from Kyle of Lochalsh and Mallaig, on wee cruises, are limited in the number of creels by the necessity of taking them all on board. Considera shifting of creels is essential in order to limit the loss of gear on exposed coasts. In consequence, t number of creels is restricted. In other cases the accommodation fixes an upper-limit to the number creels per fleet since, when moved, the whole fleet is brought on board. In circumstances such as th there is an advantage in using small creels, provided this is not taken so far as to curtail the catch. T latter point is of particular importance where crabs account for a significant proportion of the fishe Although individually single-eyed creels catch fewer lobsters than double-eyed (Thomas, 1953), it m

l be that, in areas where the capacity of the boat limits fishing, the overall catch will be increased using the smaller, namely, the single-eyed, creels.

A wide variety of baits is employed, the major factor in the choice of which is availability. On the t coast where seine-net boats operate from most harbours, bait is generally obtainable from this rce and rejected fish or fish heads, etc., are commonly employed. In such districts fresh bait is preferred, nough it is sometimes lightly salted to keep it for a few days, especially over weekends, and also to den it. In smaller ports, where there is also white fishing, bait can be obtained at negligible cost but arger ports it frequently has to be bought. Gurnard is considered to be a very good bait on account of

TABLE III

The average crew and number of creels worked from boats of varying sizes, by coasts, for Scotland, during 1953

Overall length of boat		Less than 20 ft.	20 ft.–30 ft.	Over 30 ft.
East Coast	men/boat	1·6	2·2	2·9
	creels/man	26	34	41
West Coast	men/boat	2·0	2·0	3·8
	creels/man	21	26	39
Orkney and Shetland	men/boat	2·0	2·0	—
	creels/man	23	38	
Overall	men/boat	1·9	2·1	3·2
	creels/man	23	33	40

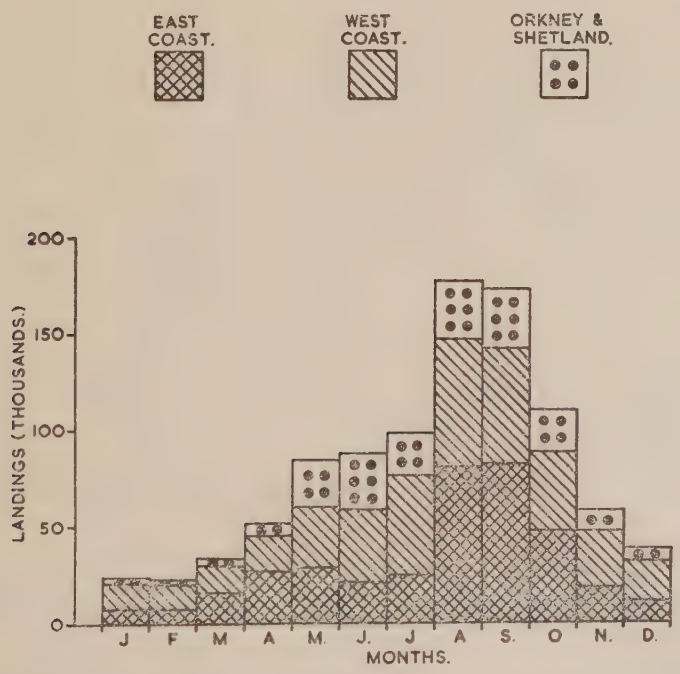

Fig. 2 The landings of lobsters in Scotland, by months, averaged over the years 1950-1954.

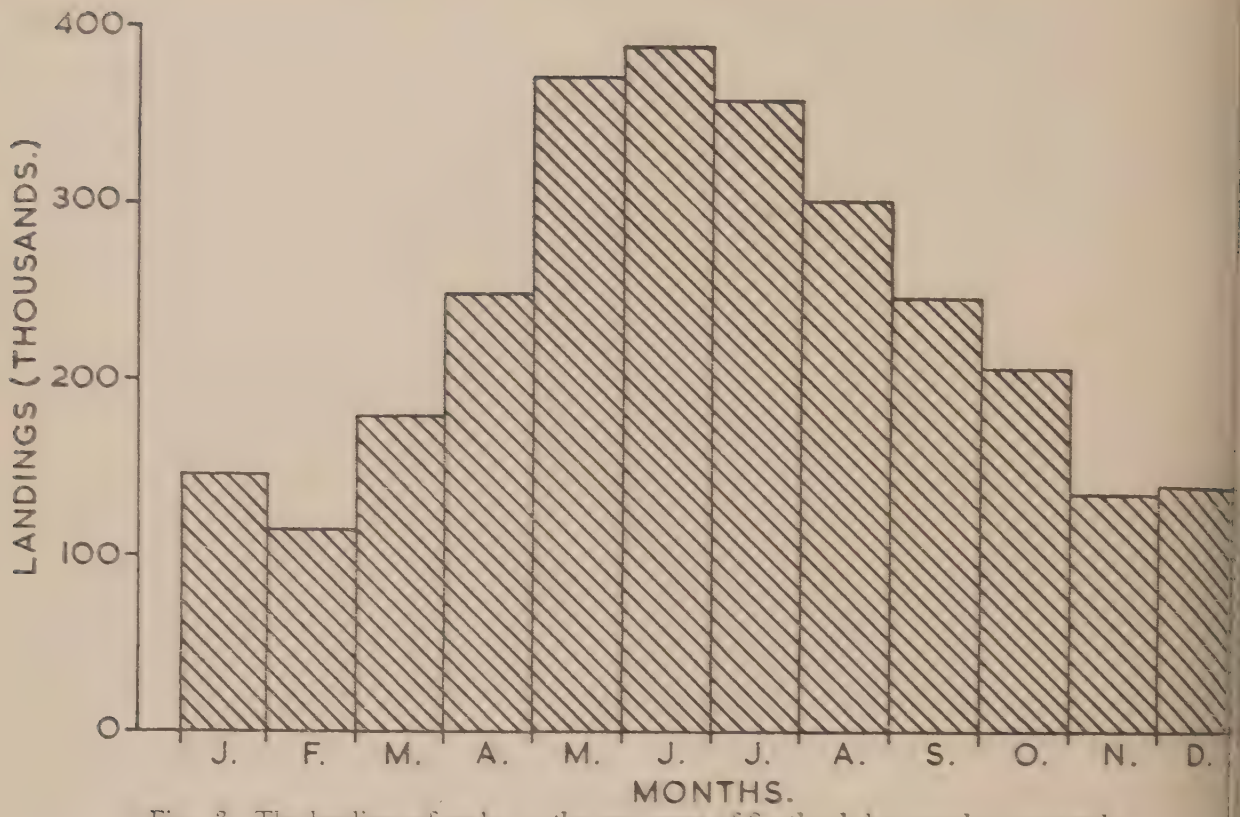

Fig. 3 The landings of crabs on the east coast of Scotland, by months, averaged over the years 1950-1954.

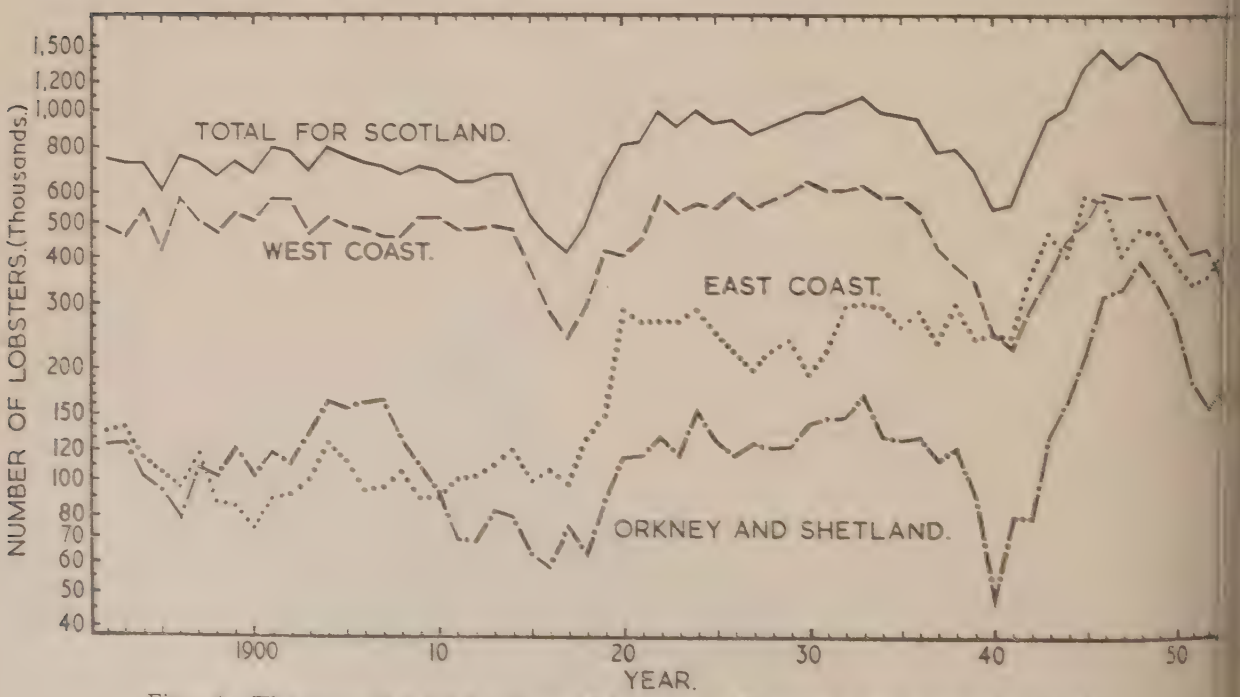

Fig. 4 The annual total landings of lobsters in Scotland and similarly for the west coast, east coast, and Orkney and Shetland, over the years 1892-1954, inclusive.

firmness. Some creel fishermen also work the ripper or handlines and so obtain bait. In some areas er than the east coast, outside the larger fishing ports, it is less readily come by and because of this ed mackerel is most frequently used. It is often caught and salted by the creel fishermen themselves, in areas of intensive fishing it is usually necessary to supplement this so that some, if not all, of the has to be purchased. Herring, although readily available, is not much favoured as a bait. It attracts ters, but, being itself soft, does not last well in the creel, even though salted.

LANDINGS AND EFFORT

Scotland

The average yearly landings of lobsters in Scotland over the post-war years 1948 to 1954 inclusive about 1,137,000, valued at around £203,000. In the case of crabs, the corresponding figures were 6,000 valued at £74,000. During 1954 approximately 676 boats were at some time engaged in creel ng and employment, whole-time or part-time, was thereby given to roughly 1,445 fishermen (Appendix Table II).

Landings of lobsters are highest in August. The five year mean 1950-54 in that month was about 000 as compared with the minimum monthly average of about 23,000 in February (Fig. 2). This onal variation is attributable principally to the increased fishing effort during the summer, but is ntuated by the greater activity of lobsters in warmer water and to the increased density of lobsters arketable size on the grounds subsequent to the main period of recruitment in June and July. This r factor is of particular significance in areas characterised by high fishing mortalities (see also pp. 35).

In the case of crabs, landings are much less subject to seasonal variation (Fig. 3). Crabs occur in er water than lobsters and are less exploited by part-time creel fishermen. Effort, therefore, is more orm throughout the year and although the factors responsible for seasonal variations in numbers bsters landed operate also in the case of crabs, their effect is very much less marked. The mean of ngs of crabs over the years 1950-54 inclusive reached a peak of about 385,000 in June, and fell to a mum of around 112,000 in February.

Fig. 4 shows the landings in Scotland of lobsters during the past sixty years. Creel fishing was very reduced during both wars, and in consequence the landings of lobsters and of crabs were at a mum in 1918 and 1940. The overall mean annual landings of lobsters for the whole sixty-year period ound 841,000. Apart from the pronounced decrease in landings during the two wars, fluctuations year to year are proportionately small, especially when compared with similar fluctuations common ost roundfish. Prior to 1914, landings varied between about 610,000 and 796,000 with an average out 711,000. After the low point of the first war they rose to a higher level, which was maintained ng the period 1920 to 1938, between the limits of about 1,107,000 and 778,000 with an average of ly 960,000. Following the decreased fishing of the second world war, landings again rose, reaching oximately 1,487,000 in 1946, the highest level ever recorded. Since 1949 landings have tended to omewhat in company with a decrease in fishing effort. However, the overall trend for the sixty years the number of lobsters landed to increase and, notwithstanding the fall since 1946, 1954 landings ound 868,000 are well above the overall mean of the last sixty years and almost equal the average ngs obtaining over the inter-war period 1920 to 1938. In considering these data it must be borne nd that they refer to numbers only and it does not necessarily follow that landings by weight will the same proportion.

Fig. 5 gives the sixty-year trend in the numbers of crabs landed on the east coast of Scotland. Crab g elsewhere is proportionately insignificant and the data given in the figure can be regarded as sentative of Scottish landings as a whole. Total landings declined steadily from about 3,994,000 in to about 1,892,000 in 1914, and further to about 902,000 during 1918. Subsequent to the first war was a sharp increase, but a long-term downward trend re-established itself from 1928 to 1938. decrease was continued during the second war. As a result landings of crabs during 1940 numbered about 636,000. Thereafter the quantity rose sharply, and the 1954 figure of roughly 3,047,000 is

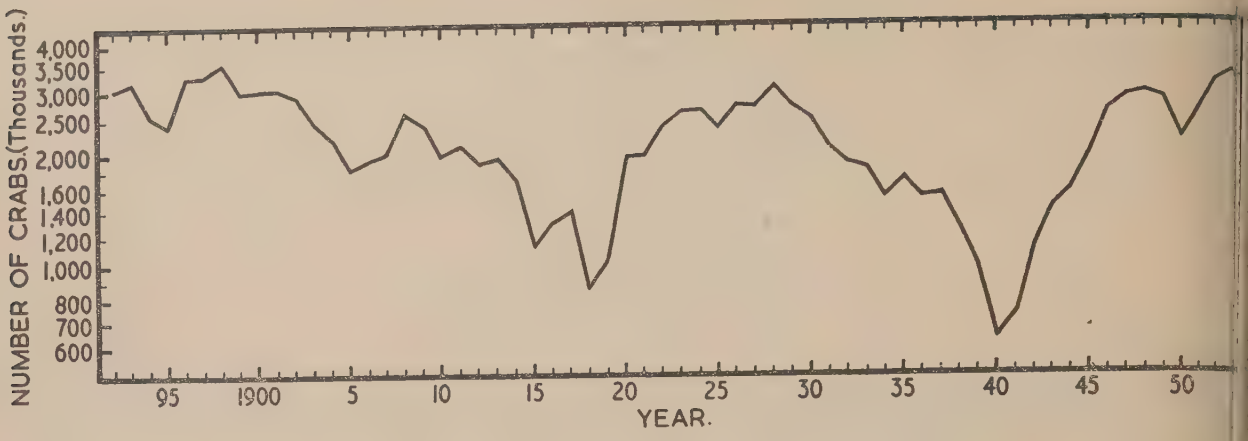

Fig. 5 The annual total landings of crabs on the east coast of Scotlandover the period 1892-1954, inclusive.

well above the sixty-year mean of about 2,255,000 and the inter-war mean of approximately 2,178,0 After a minor recession between 1948 and 1950 the recent post-war strong upward trend has b re-established and the current level of landings is the highest recorded for the last fifty-six years. Th high levels are to a large extent sustained by the recently developed crab processing industry at Th and Berwick-on-Tweed (see also p. 76). It seems possible that the persistent downward trend, obtai over the period 1898 to 1940 has been reversed.

(*b*) Eyemouth District

The Eyemouth Fishery District (Fig. 1), with about 11 miles of coastline, comprises three cre Burnmouth, Eyemouth and St. Abbs, each with a harbour (Appendix Table I). Fishermen from the of these creeks also work grounds to the south, off the Northumberland coast, as far as Holy Island. C fishing is directed at the capture of both lobsters and crabs, the latter currently accounting for ne three-quarters of the total annual income (Appendix Table II). Lobsters are fished on the inshore grou being taken from low water mark out to about 15 fathoms. Crabs are worked in the deeper wa out to about 30 to 35 fathoms, as far as the three-mile limit. Outside the limit most grounds are wo with seine nets and these operations preclude creel fishing. The fleet during recent years has b composed of up to 30 vessels mostly between 20 and 35 ft. overall length. Fishing is prosecuted throug the year by about 16 of these, and at certain times by two or three small seine net boats, as well as l number of small craft during the summer. The mean number of boats working creels in Eyemo District for each month, averaged over the four years 1950 to 1953, inclusive, are shown in Table IV

The bulk of the landings are made by half-decked, motored boats of between 25 ft. and 35 ft. enga

TABLE IV

Average number of boats engaged in creel fishing and the average catch of lobsters and crabs, respectively, per 100 creel hauls, by months, for the years 1950 to 1953, inclusive, in the Eyemouth Fishery District

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ove weigh aver
Boats	13·9	13·4	16·4	17·5	19·0	19·5	21·5	24·4	25·3	17·7	14·3	13·7	18
Lobsters, Catch/100 creel hauls .	6·3	5·8	7·8	11·0	8·5	3·8	5·6	32·8	34·2	25·7	18·4	12·0	15
Crabs, Catch/100 creel hauls .	279	229	258	209	237	202	172	118	104	123	156	200	

Fig. 6 The Fishery Districts of Eyemouth, Leith and Anstruther, showing the creeks, harbours, anchorages, etc. together with the fishing grounds and the 1954 landings of lobsters and crabs, respectively.

Key: ⁝⁝⁝, the 1954 lobster fishery, each dot represents 200 lobsters; ∿∿∿, known lobster grounds thus enclosed; ×, the 1954 crab fishery, each cross represents 5,000 crabs; ←→, areas of strong tidal current; ●, harbour, full tide, for boats of up to 55 ft.; ◔, ◐, ◔, harbours open similarly for boats of up to 40 ft., 30 ft., and 20 ft., respectively; ○, harbours which dry out; □, creeks with pier, anchorage or beach only; r, s, st, m, etc., the nature of the bottom rock, sand, stones, mud, etc., taken from Admiralty data. Creeks associated with creel fishing are indicated by upright capitals.

principally in creel fishing. These boats are equipped with mechanical creel haulers, and in general ha a crew of three. Certain of the larger craft are manned by a crew of four, whilst a number of small boats of around 25 ft. are operated by two fishermen only.

In the autumn a proportion of the boats, particularly from St. Abbs, direct part of their efforts line fishing, and at Burnmouth two boats alternately work the seine net and creels.

Creels are worked in fleets of about fifty and, in general, a boat will be worked with one such fl for each member of the crew. Smaller boats often work fleets of 30 to 35 creels whilst it is also comm to adopt this number when working creels in conjunction with other types of fishing.

Creels are arranged at intervals of about 10 to 12 fathoms along the groundrope when working lobster grounds. They may, however, be spaced as much as 20 fathoms apart when working crab groun offshore. The groundrope is weighted at each end by a heavy stone. Individual creel stones are ligh being not much more than sufficient to carry the creel to the bottom. A strong tidal current runs off t coast and this, as well as the fact that none of the three harbours is negotiable for boats of over 30 ft. low tide, necessitates working creels according to the tide. Creels are lifted once daily.

The creels employed are of the double open-eyed type, similar to that shown in Plate 1. The ba measurement averages about 29″ by 18″, and the height 15″; the diameter of the eye is about 5″ and is generally round in shape. This creel is used for both lobster and crab fishing. Fresh bait is employ almost exclusively, being obtained from the local seine net boats at each port.

Burnmouth fishermen work grounds up to 3½ miles offshore, extending from Eyemouth southwar to Holy Island. The most prolific grounds are off Berwick-on-Tweed and in Goswick Bay. Eyemou fishermen work the grounds a few miles on either side of the port. The St. Abbs boats fish from Barnsn to St. Abbs but mainly between Fastcastle Point and St. Abbs. The area of the grounds covered by bo of the Eyemouth District is approximately 25 square miles for lobsters, with an additional 37 squa miles for crabs (Fig. 6). The bottom shelves more gradually southwards from Burnmouth and proportio ately a much larger area is available to the fishermen from this creek than from the creeks of Eyemou and St. Abbs. Landings at Burnmouth account for three-quarters of the total landings of lobsters a crabs for the District. Merchants from Eyemouth and Berwick and the Eyemouth Fishermen's Associati collect the catch daily at all three creeks. The Saturday's catch has, however, to be stored in float boxes over the weekend.

Lobsters are landed in greatest number during August and September (Appendix, Table III) wh the largest number of boats are working (Table IV). Furthermore, due to the good weather boats working more inshore, namely on lobster rather than on crab grounds. In order to avoid loss of ge creels are fished offshore during the winter months. The catch of lobsters per 100 creel hauls is at peak in September (Table IV) and it is probable that one factor contributing materially to the hi landings in August and September is the immediately preceding recruitment to the marketable sto of lobsters on the ground. The average weight of lobster marketed in the District is about 18 oz.

In the case of crabs, seasonal variation in landings is much less marked than for lobsters. The numb falls off during the summer months from July onwards (Appendix, Table IV). During this period ma crabs are "soft" and in poor condition, and boats tend to concentrate on the inshore lobster fishi Landings of crabs pick up again from December onwards. The seasonal switch of emphasis from crab lobster fishing is reflected in a falling off of the catch of crabs per unit fishing effort during the mon July to November (Table IV). The average weight of crab marketed in the Eyemouth District is ab 16 oz.

Fig. 7 shows the post-war landings of lobsters and crabs in the Eyemouth District, together with immediate pre-war average as a reference. Numbers of both lobsters and crabs since the war have b running at about twice the 1938 level, and 1954 landings are the highest ever recorded. Before 1938 creel fishing from the creek of Eyemouth was insignificant and since the war activity and landings ha fallen from their immediate post-war high level. These landings, however, represent only a small fract of the District total, and at Burnmouth and St. Abbs creel fishing is actively pursued and the high le of post-war effort and landings has been maintained. A recent further impetus to the fishery has been activities of a processing plant at Berwick-on-Tweed. This commenced operation in 1953 and now ta up the greater part of the crab landings of the District.

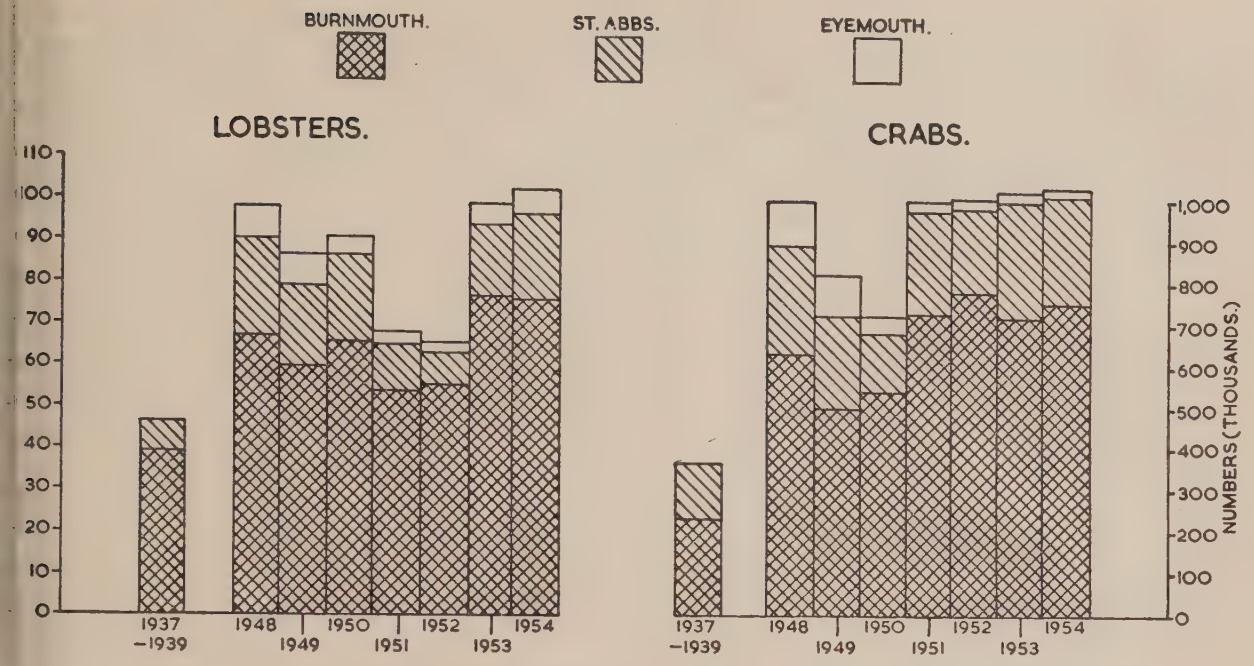

Fig. 7 The annual landings of lobsters and crabs, respectively, in the creeks of the Eyemouth Fishery District for the years 1948-1954, inclusive, together with the corresponding pre-war yearly averages 1937-1939.

Leith District

The Leith Fishery District extends from St. Abbs Head to the Firth of Forth (Fig. 1). It represents ut 50 miles of sea coast and comprises nine creeks, all of which are equipped with harbours (Appendix, ble I). Creel fishing is largely concentrated at Dunbar, which accounts for about two-thirds of the rict landings by value. At this creek the fishing is directed at the capture of both lobsters and crabs, latter accounting for over one half the income. Elsewhere, lobsters are more important. A mixed ery exists at Cove, whilst at North Berwick and Newhaven effort is directed at the capture of lobsters, taking of crabs being largely incidental (Appendix, Table II).

The District fleet during recent years has comprised about 30 motored boats together with one -motored. Vessels are mostly in the range 25 ft. to 35 ft. overall length. At Dunbar, craft are on the rage somewhat larger than elsewhere, being mainly about 30 ft. Mechanical creel haulers are not l at any of the creeks. Fishing is prosecuted throughout the year by about 15 boats, and regularly n April to October by 20 vessels, with the further addition of part-time creel fishermen. Table V s the mean number of boats working creels in the Leith Fishery District for each month averaged the four years 1950-1953, inclusive.

TABLE V

Average number of boats engaged in creel fishing and the average catch of lobsters and crabs, respectively, per 100 creel hauls, by months, for the years 1950 to 1953, inclusive, in the Leith Fishery District

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Overall weighted average
. . . . .	15·7	16·0	18·3	20·8	25·0	26·7	27·8	26·2	22·3	18·7	17·0	15·5	20·8
ters, Catch/100 creel hauls .	20·8	23·1	26·3	18·7	21·4	18·0	24·8	31·6	36·7	30·2	27·5	20·5	26·0
s, Catch/100 creel hauls .	123	131	115	179	142	145	84	29	72	79	111	97	100

Boats, in general, have a crew of three although larger craft from Dunbar are sometimes worked b four men, whilst 20 ft. to 25 ft. boats, especially when manned by part-time operators, are frequenti fished by two men. Certain crews seasonally direct part of their efforts to other fishing. The boats fron Newhaven are occupied with ring-netting during November and December, and elsewhere some boat are used for handlines or, in the case of a few of the larger boats, for seining.

Creels are generally worked in fleets notwithstanding the absence of mechanical creel haulers. Boa of around 30 ft. work as many as 40 to 50 creels per fleet, and one fleet per man. In this fishing, creel are arranged along the groundrope at a separation of about 12 fathoms. Smaller craft, in general, wor fleets of 14 to 20 creels at a separation of about 8 fathoms between creels. The crew of these boats wor around 30 creels per man in the case of full-time fishermen, but less in the case of part-time operators.

Single, open-eyed, braided creels are the type most commonly adopted in the District, although a Dunbar double-eyed creels are almost as numerous as those with a single eye. The base of the cree measures about 26″ by 17″ and the height 14″. The eye is commonly slightly oval with an internal lon diameter of about 5½″ and a vertical diameter of 5″. Each creel has a heavy sinker. Unsalted bait is almos invariably used, being obtained from other local fishing activities. In some cases salted bait is kept fc emergency use. Fishermen from Cove, Dunbar and North Berwick work sections of the ground, whic together extend along the whole of the coast from St. Abbs Head to the Fidra Rock (Fig. 6). The ground are, in general, patchy, both lobsters and crabs being taken. The latter, however, are more common i the deeper water beyond 10 fathoms where the bottom is predominantly soft. Fishing extends out to th three-mile limit but beyond that is mostly prevented by seine netting. Boats from Newhaven work locall and around Inchkeith exclusively for lobsters. The total area of the grounds in the Fishery Distric worked for lobsters is about 35 square miles, with an additional 20 square miles of predominantly cra grounds.

Landings at Dunbar are sold mainly to local wholesale buyers, a large proportion going for processin Otherwise in the District they are railed to national markets. Temporary storage is in floating boxe Lobsters are consigned packed in wood shavings, crabs being despatched without special packi material.

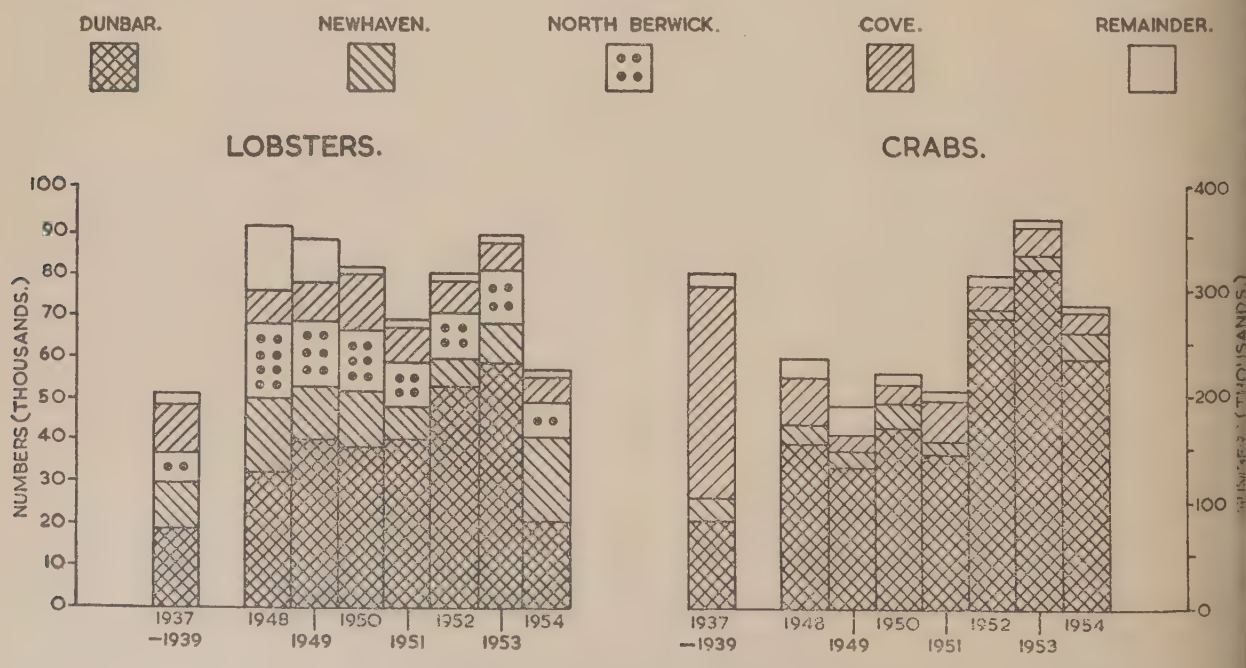

Fig. 8 The annual landings of lobsters and crabs, respectively, in the Leith Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly averages are also shown.

obsters are landed in greatest number during August (Appendix, Table III) when also the greatest ber of boats are working and the catch per unit effort is close to its September peak of about 37 ers per 100 creel hauls (Table V). At this season fishing is mainly carried out well inshore at depths 3 fathoms on purely lobster grounds. The average individual weight of lobster marketed is about . In consequence of the diversion of effort to the capture of lobsters, the landings of crabs fall to a num during August. Landings of crabs attain a maximum in May, and there is a subsidiary maximum in October (Appendix, Table IV). The highest average catch of about 179 crabs per 100 creel is attained during April (Table V). The average individual weight of the crabs landed is about .

he post-war landings of lobsters and crabs in the Leith Fishery District are shown in Fig. 8. The ngs of lobsters have been well above the pre-war level, and were more or less maintained between and 1953 but in 1954 fell to practically the pre-war level. A considerable increase in landings at bar in succeeding post-war years was offset by a fairly general decrease elsewhere in the District. e case of crabs, District landings since 1948 have, in general, been somewhat below the pre-war notwithstanding the fact that at Dunbar landings in 1948 were about double those of pre-war and risen progressively during more recent years. Total landings of crabs for the District, following the ases at Dunbar and North Berwick, have risen progressively since 1948 but the full extent of the ase in these two creeks has, in part, been offset by a decrease in landings at Cove, Cockenzie and naven (Fig. 8).

NSTRUTHER DISTRICT

he Anstruther Fishery District with about 31 miles of sea coastline, extending from the north of nner Firth of Forth to the River Tay, comprises eleven creeks each with a harbour (Appendix, e I). Creel fishing in the District is very largely confined to Crail where whole-time fishermen e both lobsters and crabs. At the remainder of the creeks fishing during 1953 was on a part-time ccasional basis for lobsters, in fair weather and shallow water. Over the District as a whole, income ed from the sale of lobsters is approximately 1½ times that for crabs. The grounds worked are mixed, xtend offshore up to depths of 15 or occasionally 20 fathoms. During summer the boats work more re than in the colder and more stormy months.

uring recent years a fleet of about 14 motored boats of between 20 ft. and 30 ft. overall length have ted from Crail. Of these, five are equipped with mechanical haulers, and five are engaged in creel g throughout the year (Table VI). Other fishermen take up line fishing for varying periods during inter months when there is a very material risk of losing creels. In the District, other than at Crail, l of about 18 boats is worked. In general these are small and not equipped with mechanical haulers, re motored. They operate part-time and seasonally, working between 12 and 30 creels per man. oats from Crail are, in general, worked by a crew of three, or sometimes two, each man fishing en 40 and 60 creels, depending on the size of boat and season.

TABLE VI

Average number of boats operating from Crail engaged in creel fishing and the average catch of lobsters and crabs, respectively, per 100 creel hauls, by months, for the years 1950 to 1953, inclusive

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Overall weighted average
. . . . .	6·2	5·5	7·0	10·5	11·0	12·2	9·8	12·8	13·5	8·8	7·0	5·5	9·1
per boat . . .	91	91	94	106	123	120	118	134	133	105	107	97	114
s, tch/100 creel hauls .	2·3	3·1	8·2	11·9	5·4	2·9	13·7	52·0	41·7	26·8	9·8	4·0	21·4
tch/100 creel hauls .	281	195	155	123	191	208	117	21	27	63	200	226	120

Creels are fished singly in shallow water, and more offshore in fleets. Practice varies from boat boat. Some crews work fleets exclusively whilst others shoot part of their creels singly. The smaller bo use fleets of about 15 creels whilst larger boats may work up to about 25. Creels are spaced at interv of about 12 to 14 fathoms. Individual creel sinkers are sufficient to hold the creel without special anchor of the groundrope.

Creels are lifted once daily. A strong tidal current runs off Crail and the harbour is only open bigger boats during half of the tide. The latter also applies to the other creeks of the District. Lifting creels, in consequence, is regulated by the tide.

Double-eyed, braided creels are used throughout the District. They vary slightly from the gen Scottish pattern in having no ring at the inner end of the eye. The braided inner end of the eye is fi so that it is open, but with a free edge. This device is considered to deter the escape of lobsters thro the eye. The base measurement of the creel is about 26″ by 19″ and the height 13″. The eye is roug oval in shape, with a horizontal long diameter about 7″ and a vertical diameter of about 5″. Fresh b obtained from the seine net boats, is preferred, but it is the practice of some fishermen to catch and mackerel for use when unsalted bait is not available.

The grounds worked extend along the coast from Elie Ness to St. Andrews and around the M Island (Fig. 6). The most extensively exploited areas are off the May Island and Hurst, and from North Carr Light to Anstruther. Crail boats also work as far afield as St. Andrews during the sumr The total area of the exploited grounds in the District is about 28 square miles for lobsters and a furt 16 square miles for crabs. The catch is stored in floating boxes whilst a consignment is accumulated, is then despatched by rail to central markets, or to merchants in Eyemouth.

Lobsters are landed in greatest number in August/September (Appendix, Table III) when also greatest number of boats are working and when the catch at about 54 per 100 creel hauls, is hig (Table VI). The average individual weight of lobsters marketed is about 16 oz. Landings of c (Appendix, Table IV) are at a maximum in June falling off during the summer months, when crabs in a poor condition, notwithstanding the increase in the amount of creel fishing. At its peak in Jan the mean catch of crabs per 100 creel hauls is around 281. The yield per unit effort varies inversely the yield of lobsters and is a reflection of the fishing methods adopted. The average weight of marketed is about 15 oz.

Fig. 9 shows post-war landings of lobsters and crabs in the Anstruther District, together with the responding 1938 figure. Numbers of both lobsters and crabs landed immediately after the war, respectively, about twice and three times that of pre-war. However, in the case of both shellfish, lanc have fallen off, though still well up on the pre-war level. This decrease has been accompanied comparable fall in fishing effort. The average number of boats working from Crail fell from 11·1 in to 8·5 in 1952 but since then has recovered to some extent (Table VII).

TABLE VII

Average number of boats, operating from Crail, engaged in creel fishing and the landings of lobsters and crabs during each year over the period 1949 to 1954

	1949	1950	1951	1952	1953	1954
Average number of boats	11·1	10·1	9·3	8·5	8·8	9·5
No. of lobsters landed .	58,626	61,244	45,882	49,871	54,796	55,433
No. of crabs landed .	311,817	352,258	265,536	293,150	276,176	286,478

There has been a parallel decrease in the part-time fishing from other creeks (Fig. 9). Thus, whe in 1948 landings of crabs were made at seven creeks of the District, no landings have been mad St. Monance since 1949, at Pittenweem since 1950 and at Anstruther and Largo since 1951.

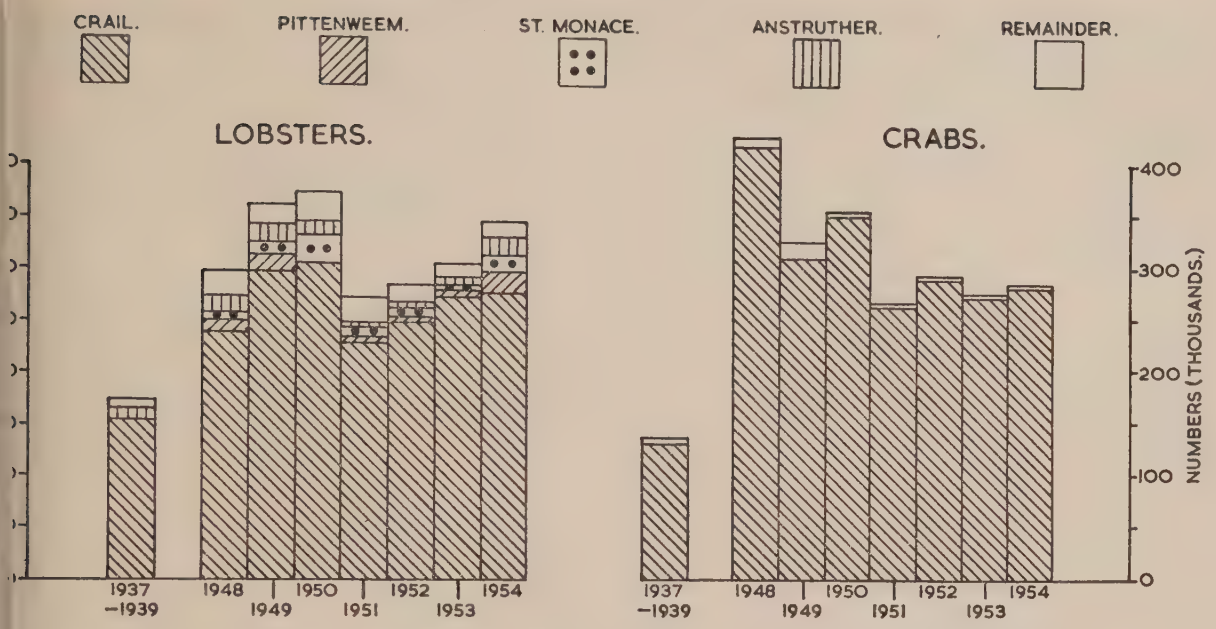

Fig. 9 The annual landings of lobsters and crabs, respectively, in the Anstruther Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly averages are also shown.

Montrose District

The Fishery District of Montrose (since 1956 this District has been renamed Arbroath), comprising creeks, extends for about 30 miles north from the estuary of the River Tay (Fig. 1). Except for Johnshaven, where landings are insignificant, each creek is equipped with a harbour (Appendix, Table I). fishing is principally concentrated at Arbroath, Johnshaven and Gourdon, where it is, in general, ducted on a whole-time basis. Except at Gourdon, the District fishery is directed at the capture of rs, although crabs caught are, in general, marketed. At Gourdon, crabs are the major objective ndix, Table II).

urrently, a fleet of about 24 motored boats work creels in the Montrose District. The larger motored are equipped with mechanical creel haulers. The smaller craft, which constitute about one-third fleet, work only occasionally and creels are hauled by hand. To a varying extent, creel fishermen o line or cod-net fishing during the winter, due to weather. The main creel fishing season is March/ ber inclusive. Larger boats with mechanical creel haulers are generally operated by three men each ng about 40 creels. These are responsible for the bulk of the landings. Part-time fishermen, with boats of 16 ft. to 20 ft. overall length, usually work two men per boat with about 20 creels per man. shing is in fleets. Those from the larger boats are of about 20 creels whilst from smaller craft 8 to 10 al. Creels are spaced at intervals of about 10 fathoms. Occasional fishermen, in general, work single close inshore.

eels are normally lifted once daily. During August, when tide permits, they may occasionally be l twice during the twenty-four hours. The harbours concerned are all half-tide, and for this reason of creels is to some extent regulated by the tide.

though larger, creels are broadly of the standard pattern (Plate 1), being braided and double eyed, except at Gourdon. The base measurement is about 28″ by 20″ and the height 16″. A somewhat r creel is commonly in use at Johnshaven. The creel eye has an internal diameter of 5″. These creels nployed principally in lobster fishing. At Gourdon, on the other hand, the fishery is principally abs, which account for nearly three-quarters of the total income. At this creek slatted wooden are used since crabs are found to be very destructive of braiding. These slatted creels may have a circular cross-section or be flat topped. When constructed exclusively for the crab fishery, the eyes

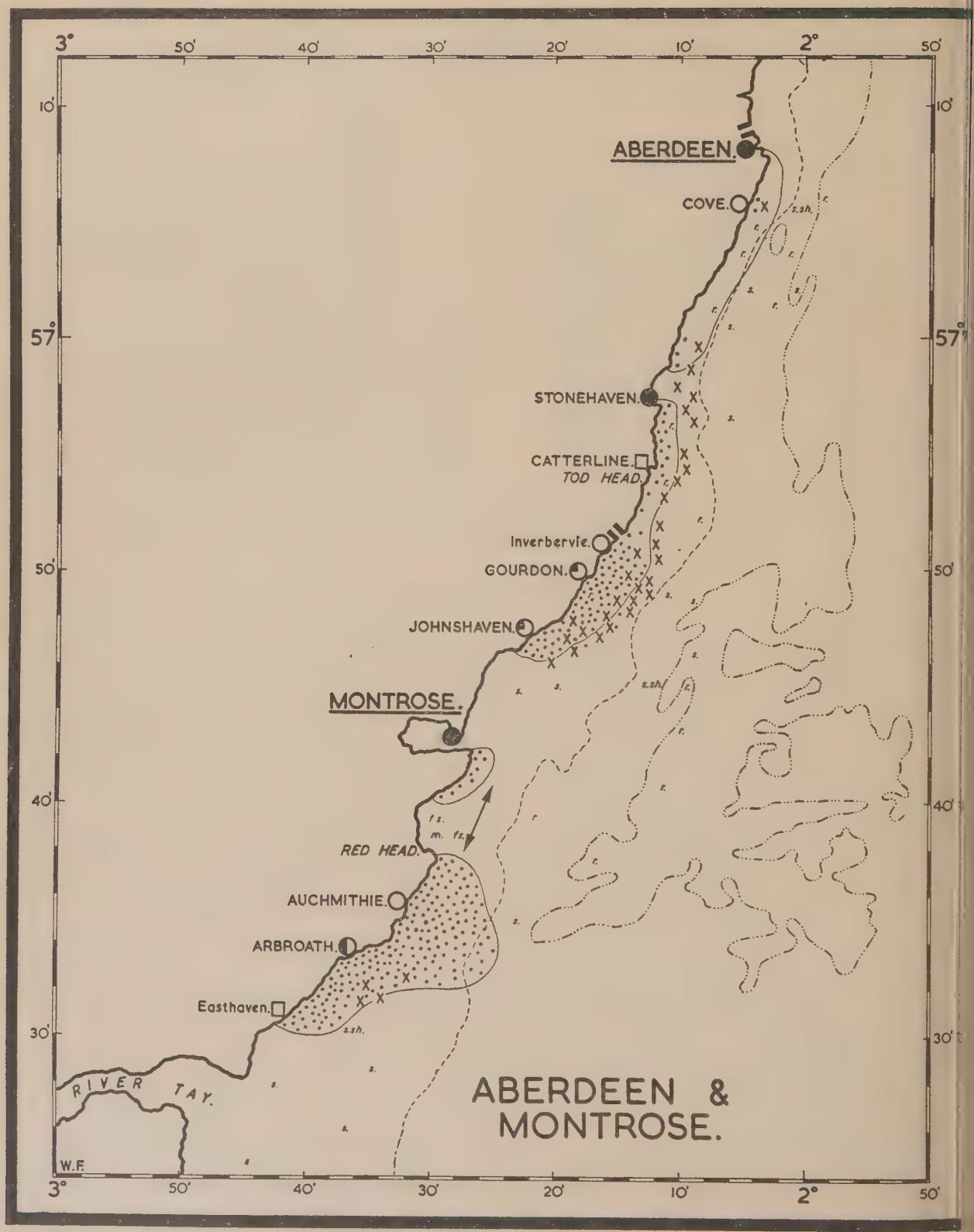

Fig. 10 The Fishery Districts of Montrose and Aberdeen, showing the creeks, harbours, anchorages, etc. together with the fishing grounds and the 1954 landings of lobsters and crabs, respectively. Key as for Figure 6.

re braided in one from each end of the creel (Plate 3). The base of these creels measures about 36″ by 22″. n the case of creels with an arched cross-section the height is 16″, whilst being 13″ for the flat topped pe. Creels used inshore, on mixed lobster and crab grounds, are smaller and invariably arched. In this ase the base measures 30″ by 21″ and the height is 15″. The braided eyes lead in one from each side of ie creel. With both types of creel, the internal diameter of the open eye is about 6″. Each creel is weighted ith heavy sinkers. These creels are heavy to use as, apart from their size, being constructed in wood, ney weigh considerably more in air than braided creels of the same weight in water. Unsalted bait is referred and is, in general, obtained from the local seine-net boats. Salted bait is used only if no other available.

The lobster grounds worked by the Arbroath boats extend from Westhaven along the shore to Red lead, in depths up to 12 fathoms. Off Red Head the fishing extends out to 20 fathoms (Fig. 10). A catch f about 59 lobsters per 100 creel hauls is attained at the September peak. Only one 19 ft. motored boat t present works regularly from Montrose, fishing for lobsters well inshore on the adjacent grounds. oats from Johnshaven work lobster and mixed grounds, extending alongshore for two miles south from ie creek and northwards as far as Gourdon. They work depths out to about 10 fathoms. An average atch of about 61 lobsters per 100 creel hauls is attained in September. Boats from Gourdon fish northwards s far as Tod Head, and work out to about 18 fathoms (Fig. 10). The coastal fringe constitutes lobster rounds, but beyond about 8 fathoms the bottom is of mud interspersed with rock and supports mainly abs. The total area of exploited grounds in the District is about 25 square miles for lobsters and a rther 10 square miles for crabs. Where necessary, the catch is stored in floating boxes. The majority f lobsters landed in the District are sold to a Johnshaven merchant. Fishermen formerly consigned their wn catch of crabs by rail, generally to Billingsgate or other national markets. Of recent years a proportion as been despatched to the processing factory at Thurso and since the opening of the processing plant at verbervie in 1954 practically the whole catch has been taken up for this purpose. For summer transit is usual to pack lobsters over ice. Taking the District overall, the average individual weight for lobsters arketed is about 19 oz. and for crabs, 20 oz.

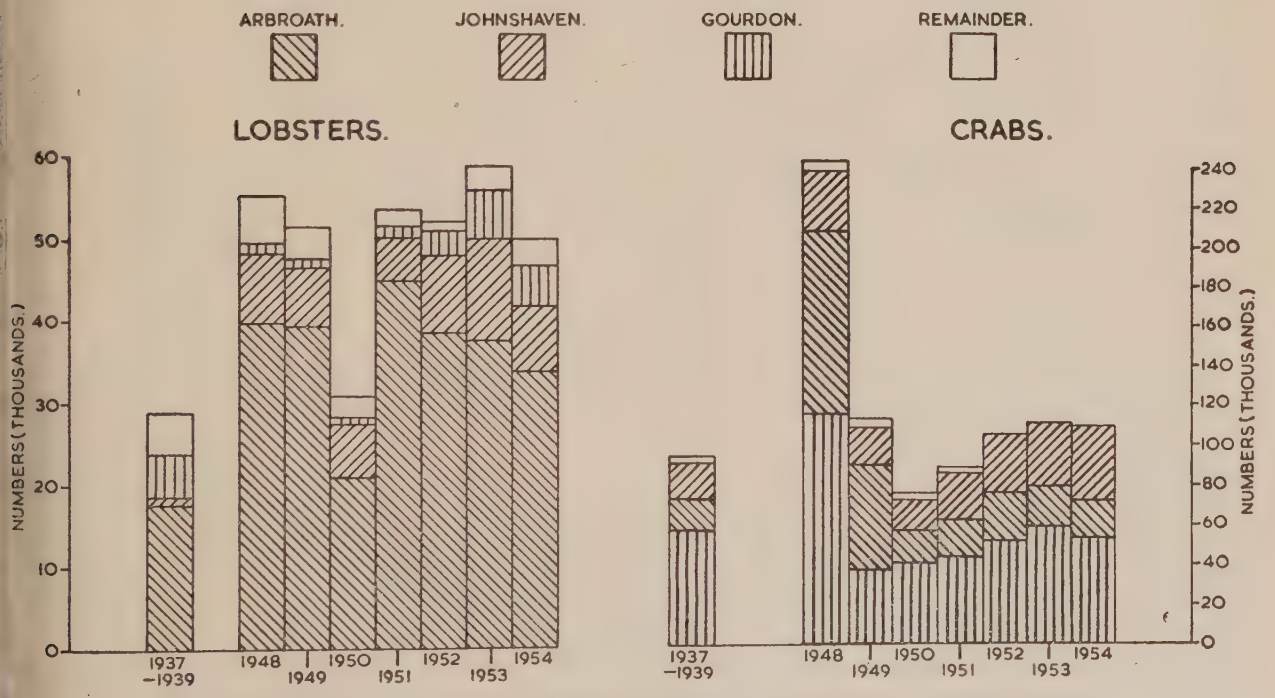

Fig. 11 The annual landings of lobsters and crabs, respectively, in the Montrose Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly averages are also shown.

Lobsters are landed in greatest numbers during April and again in August/September (Appen Table III). The peak landings of crabs occur during June (Appendix, Table IV). Fig. 11 shows the pre- post-war landings of lobsters and crabs, respectively, in the Montrose District. Post-war landing lobsters have been maintained at a level well above the pre-war average. In the case of crabs, apart f the exceptionally high 1948 figure, the landings post-war have been relatively uniform and not mark different from the immediate pre-war level.

(*f*) Aberdeen District

The Aberdeen Fishery District, as at present constituted, comprises the 20-mile coastline south Aberdeen. This was formerly divided into the two fishery Districts, Stonehaven and Aberdeen. fishing is relatively unimportant being carried on at present from three of the eight creeks. These Catterline, Stonehaven and Cove, of which the latter two possess harbours (Appendix, Table I). Inc from the fishery is mainly attributable to crabs. Creels are at present worked mainly by older men, in general, on a part-time basis. Frequently lines are fished in conjunction with creels, though in t cases the greater part of the income is usually derived from crabs and lobsters. Commonly a boat work creels exclusively during the summer but will operate fewer creels and combine this with lin other fishing from about November to May. The grounds exploited extend out to about 20 fathoms support predominantly crabs, lobsters being confined to the shallow coastal fringe out to about 6 fathoms. The fleet of about 10 vessels is comprised mainly of smaller craft of about 20 ft. overall len but at times creels are also worked by two 28 ft. seine net boats at Stonehaven. In general, creels hauled by hand. Fishing tends to be largely seasonal, only one boat, which operates from Stoneha working throughout the year (Table VIII). Boats are, in general, manned by a crew of two, alth a proportion of the smaller boats of about 16 ft. are worked single handed.

TABLE VIII

Average number of boats engaged in creel fishing and the average catch of lobsters and crabs, respectively, per 100 creel hauls, by months, for the years 1950 to 1953, inclusive, in the Aberdeen Fishery District

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ov Wei ave
Boats	1·0	1·0	4·0	8·5	9·0	7·0	9·2	10·5	8·5	4·5	1·5	1·2	
Lobsters, Catch/100 creel hauls .	—	—	4·3	16·9	15·2	10·9	5·6	19·1	24·6	19·6	0·2	0·7	1
Crabs, ... Catch/100 creel hauls .	152	102	247	347	345	221	217	250	226	200	178	161	24

Commonly, about 20 creels are worked per man but the whole-time creel fishermen work 35, w some of the part-time fishermen in the smaller boats work as few as 10. In this latter case, creel fished singly. It is, however, more usual to operate exclusively in fleets of about 12 to 16. Creels are once daily. At Catterline and Stonehaven the half-round slatted type creel, similar to that used at Gou is employed. When working for crabs a large double open-eyed variety with a base up to abou by 24″ and height 15″, and oval eyes of long diameter about 6½″, is preferred. The eyes in these c are braided in from the two ends. For working mixed crab and lobster grounds it is customary to smaller creel, the base of which is about 28″ by 18″ and the height 15″. The eyes are similar to tho the larger creels but braided in, one from each side.

Fresh bait is usually employed, but bait may be salted over the weekend for use on Monday. offal, or unmarketable species, are obtained for use as bait from the line fishing activities or from seine net boats at Stonehaven.

The grounds worked extend along the whole coast of the District south from Stonehaven. The also a local area off Cove which is exploited to some extent by boats from that creek (Fig. 10). The

exploited in the District is about 12 square miles, being crab grounds except for the narrow coastal ge of about 7 square miles, which supports a mixed lobster and crab fishery.

The seasonal variation in landings of both crabs and lobsters (Appendix, Tables III and IV) is largely flection of the variation which occurs in effort applied. The average weight of lobster landed is about oz., and the comparable figure for crabs is 24 oz. The catch per 100 creel hauls at its peak is about for crabs and 23 for lobsters, although this latter figure is considerably exceeded by boats fishing usively for lobsters. Landings of crabs and lobsters tend to vary from year to year, and whilst in 1948 e were at a very high level, in all the years since then landings have been at only about half those ne immediate post-war year and roughly equal to those of 1938 (Fig. 12). On the other hand, this is ely attributable to the fluctuations in effort which varies considerably, being influenced by weather the profitability of other competing interests both at sea and ashore. For example, the high levels in 3 are attributable to the scarcity of whitefish which created more than the usual interest in exploiting shellfish and a number of crews normally only interested in lining and seining turned to creel fishing hat year.

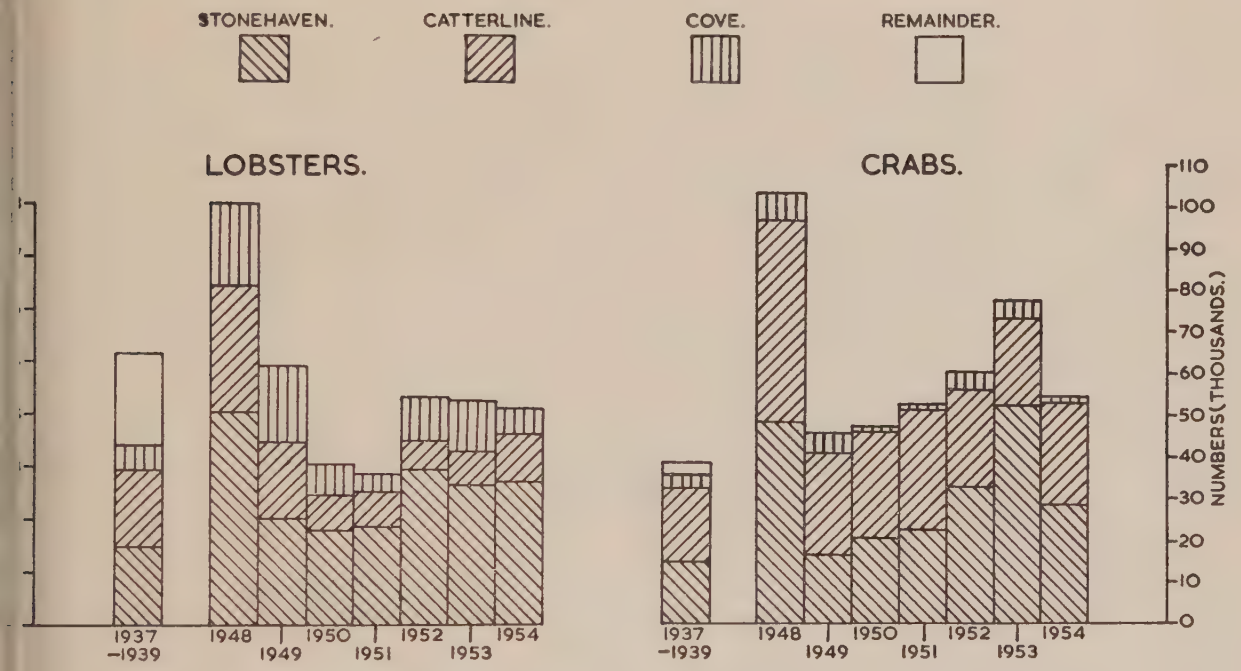

Fig. 12 The annual landings of lobsters and crabs, respectively, in the Aberdeen Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly averages are also shown.

Peterhead District

The Peterhead District (Fig. 1) comprises about 31 miles of coastline with seven creeks. Creel fishing rgely confined to the northern half of the District, at Boddam and Peterhead. Each of the creeks of District has a harbour (Appendix, Table I). Landings at Peterhead are usually made at the adjacent l harbour of Buchanhaven and not at the main port. Creel fishing is directed at the capture of both ies, but crabs currently account for about three quarters of the total annual income (Appendix, le II). Lobsters, together with crabs, are fished off the rocky coast out to about 12 fathoms. Crabs, he other hand, are worked principally in the deeper water out to about 30 fathoms. Creel fishing nd the three-mile limit is prevented by the activity of the seine net boats. In recent years the fleet consisted up to about 13 boats, all motored and under 30 ft. overall length. Four boats at Boddam out 20 ft. overall length and two at Peterhead are engaged as far as is possible in creel fishing but,

due to the exposed coast, this is not practicable in winter. In consequence, crews commonly switc handlines during the period November to February. Most also work the ripper simultaneously creels to some extent. These crews have, however, been classed as whole-time creel fishermen sinc greater part of their livelihood is derived from this pursuit. Table IX gives the mean number of employed in creel fishing in the Peterhead District, during each month, over the four years 195 1953, inclusive.

TABLE IX

Average number of boats engaged in creel fishing, by months, for the years 1950 to 1953, inclusive, in the Peterhead District

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Boats . . .	0·2	1·5	5·2	6·2	7·2	7·7	6·7	5·0	6·7	5·7	0·5	0·2

Five boats at Boddam are equipped with mechanical creel haulers. Boats of all sizes are us worked by two men, each fishing about 25 creels, although the occasional part-time fisherman may as few as 10 creels. In general, in deeper water, when fishing for crabs, creels are set in fleets of abou roughly 12 fathoms apart. On the other hand, when working for lobsters in the shallow water, creel shot singly. Heavy individual creel sinkers are used and creels are lifted once daily. A strong tidal cu runs off the coast and this restricts the time of lifting.

Creels are of the double open-eyed type. Those used for crab fishing are of wooden slats, with bra eyes, entering one from each end of the creel. The base of this creel is about 31″ by 22″ and the height The inner end of the creel eye is braided on to a 2″ rubber sleeve, which, being flexible, is regard deterring the escape of crabs through the eye. The inner dimensions of the eye, which is oval, are a 7″ in horizontal diameter by about 5″ vertical diameter. A smaller, wholly braided creel is used in lo fishing. The creel is of the double open-eyed type, similar to that shown in Plate 1, with the leading in one from each side. The base of this creel is commonly about 29″ by 20″ and the height The inner end of the eye consists of a circle of galvanised iron wire of diameter $5\frac{1}{2}$″ to 6″.

Unsalted bait is preferred. This is obtained from the seine net boats or from the other fishing acti with handlines or ripper.

Lobsters are worked on the coastal fringe for five miles south from Peterhead to Dunby Rock an Scotstown Head (Fig. 13). Crabs are taken in the bays north from Peterhead to Rattray Head an deeper water outside the lobster grounds. Collieston boats work sporadically immediately off the c The area covered by boats of the Peterhead District is about 10 square miles for lobsters, and for c approximately 8 square miles.

At weekends and at other times, when the catch is too small to market, it is stored for a few in floating boxes. Fishermen despatch their own catch of lobsters to distant markets, principally Billings or Manchester. Recently the main outlet for crabs has been the processing plants at Boddam, locally, at Inverbervie. Landings of crabs are at a peak in July and August (Appendix, Table IV) when the catch per unit of fishing effort, at around 600 per 100 creel hauls, is at its highest. Landings of lob (Appendix, Table III) rise to maxima in April and September and at these times the catch, at ar 55 per 100 creel hauls, is also at its highest. At other seasons the catch per 100 creel hauls tends to fa very markedly in respect of both lobsters and crabs, reflecting local fishing practice. Fishermen ten direct their efforts more to the capture of lobsters during March to April or May, and then switch crab fishing during May to August. In the autumn, until the weather breaks, a mixed fishing for l lobsters and crabs is undertaken. The occasional lobster caught when working on the crab grou results in a low catch per 100 creel hauls in respect of lobsters, and reflects the low density of lob *on those grounds.* A corresponding situation applies in the case of crabs caught on grounds fished prima for lobsters. The average individual weight of crabs marketed is 20 oz., and that for lobsters 24 oz.

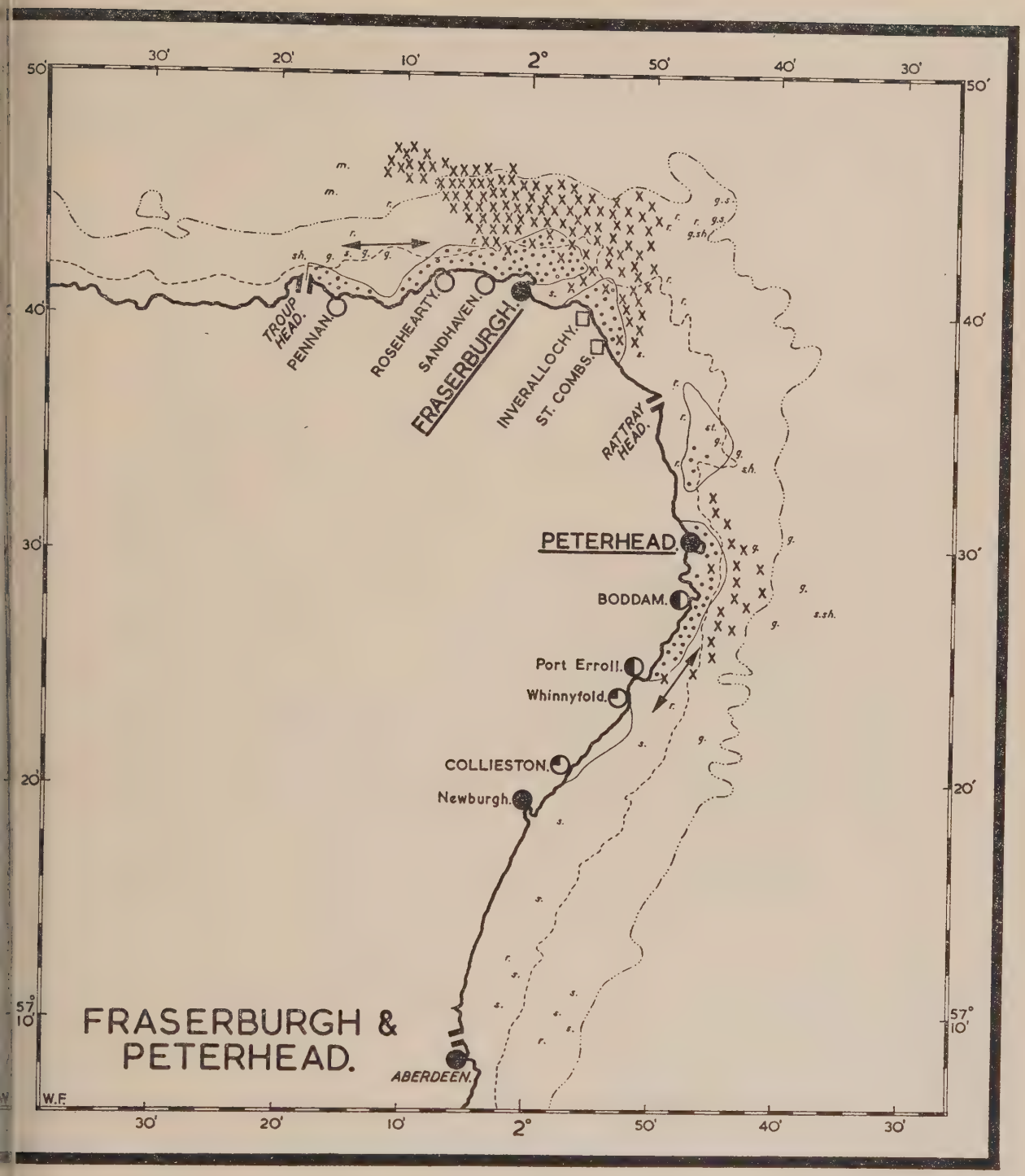

Fig. 13 The Fishery Districts of Peterhead and Fraserburgh, showing the creeks, harbours, anchorages, etc., together with the fishing grounds and the 1954 landings of lobsters and crabs, respectively. Key as for Figure 6.

Fig. 14 shows the post-war landings of lobsters and crabs in the Peterhead District. Landings lobsters rose in 1948 to well above the pre-war figure but immediately thereafter fell back to about pre-war level which has roughly been maintained. The District totals, however, mask the tende for post-war landings at Boddam to increase somewhat whilst those of Peterhead have decreased. In case of crabs, landings in recent years far exceed the pre-war figure. Landings of crabs at Peterhead si 1948 have been roughly maintained, but at Boddam have continued to rise pronouncedly dur succeeding post-war years.

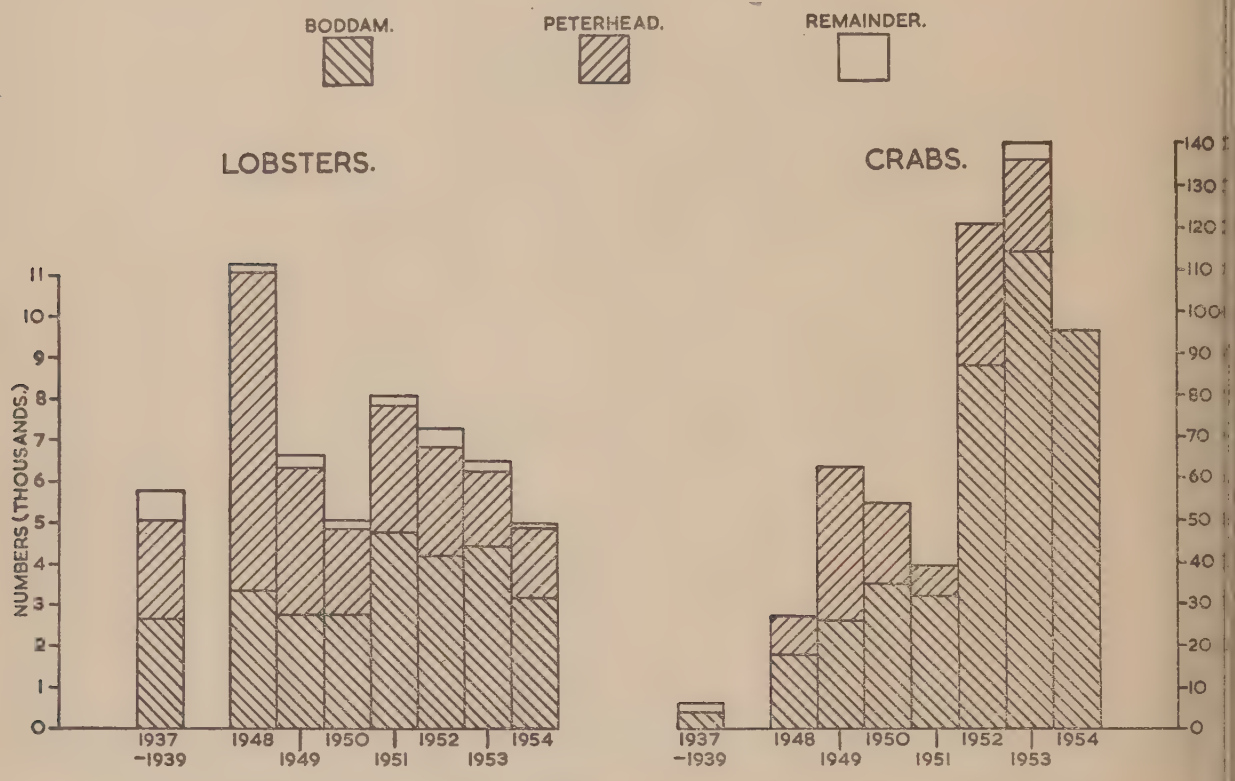

Fig. 14 The annual landings of lobsters and crabs, respectively, in the Peterhead Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly averages are also shown.

(*h*) Fraserburgh District

The Fraserburgh Fishery District extends from Rattray Head, a distance of about 18 miles along coast, to Troup Head. There are six creeks, at all of which creel fishing is prosecuted to some ext although landings at those creeks with no harbour (Appendix, Table I) are relatively insignific Fraserburgh itself accounts for about 95%, by value, of the total landings in the District (Appe Table II). The part-time fishermen at Sandhaven, Pennan and Rosehearty, working principally lobsters, land about a quarter of the District total for this species. Taking the District as a whole, c account for 86% of the total, by value. To a very large extent crab and lobster grounds are distu The former species is taken in deeper water from about 14 fathoms outwards, and fishing may be car out at depths up to 80 fathoms, although this is exceptional. Lobsters are restricted to the rocky part the narrow coastal fringe which shelves steeply (Fig. 13).

During recent years a fleet of about ten motored boats of overall length between 25 ft. and 35 have fished creels from Fraserburgh. In addition, a number of smaller handpulled boats have opera casually during the summer. At other creeks a total of approximately 7 motored boats have been enga part-time and seasonally at creel fishing, principally for lobsters. Boats of the Fraserburgh fleet are

quipped with mechanical creel haulers, and three of these boats work throughout the year. Other crews vitch to line fishing during the winter, and there is also some diminution in effort applied to creel fishing uring the midsummer when, for short periods, certain crews prosecute mackerel fishing. There is a ir sized ripper fishery for cod and codlings, and this is often conducted in conjunction with creel fishing. ne extent to which total effort is divided between the various types of fishing depends on the immediate ofitability of each. Notwithstanding these other occupations, the bulk of the income, in most cases, is tributable to crabs and lobsters and these crews have therefore been classed as whole-time creel hermen.

The 25 ft. to 35 ft. boats are worked by a crew of three or two, operating about 50 creels per man in mmer. This latter figure drops to about 35 during the winter. When working for lobsters, fleets of about creels are commonly employed. Somewhat bigger fleets of 25 to 30 creels, distributed at 12 fathom ervals, are used on the crab grounds, except when fishing the very deep water where the number is tricted to about 20 and the separation is increased to 20 to 25 fathoms.

Creels are lifted once daily. When working in shallow water this has to be carried out according to e tide, but in deeper water lifting can be undertaken at any time. Double open-eyed braided creels e used and the pattern is similar for both crabs and lobsters. On the crab grounds the creel employed s a base of about 33″ by 23″ and a height of 25″. The eye is circular with a diameter of $5\frac{1}{2}$″ to 6″. e lobster creel is about 2″ smaller than this in each dimension and with a circular eye of $5\frac{1}{2}$″. Individual el sinkers are heavy. Unsalted bait is used whenever possible and this is obtained from the other hing activities or from local seine net boats.

Lobsters are worked on the narrow coastal fringe of the whole District. The total area is about 10 uare miles. Crabs are worked in depths of beyond 14 fathoms and up to 7 miles offshore, from Rattray ad to Troup Head. This commonly includes depths of up to 50 fathoms, and exceptionally, as in the a 6 miles north-west from Fraserburgh, as much as 100 fathoms (Fig. 13). In the early part of the son, March and April, the grounds situated 3 to 5 miles to the north-west and north of Kinnaird ad are most intensively worked. In May the Fraserburgh boats move south-east and operate on the unds off Rattray Head up to 1 mile from the coast. Thereafter the fleet moves back and fishes grounds to 7 miles north and north-west from Kinnaird Head for the period November to February. The total a of the grounds worked for crabs is around 28 square miles. Certain crews frequently work both bs and lobsters, but the fisheries are largely distinct. A proportion of the creels, being of the larger e, are set for crabs in deeper water whilst the remaining, smaller, creels will be shot in shallow water the lobster grounds. Commonly, at least two-thirds of the total effort is directed at the capture of bs. This latter generalisation does not, however, apply to the part-time fishermen who operate at eks other than Fraserburgh or to the casual fishermen from Fraserburgh itself, all of whom engage ncipally in the capture of lobsters. These, however, are responsible for a small proportion only of the al income from creel fishing.

When necessary, the catch of lobsters is stored for a few days in floating boxes prior to despatch to thern markets, chiefly Billingsgate and the Midlands. Fishermen consign their own catches. Lobsters generally packed in wood shavings, whilst crabs are closely packed over a layer of ice. Prior to 1955 bs were mainly marketed at Billingsgate but a proportion went to processing at Thurso. In 1955 the jority of crabs were sold for processing at Inverbervie, regular transport being provided by the firm cerned.

Landings of crabs rise to a maximum in the summer. There is, however, a minor fall in landings ing July which is mainly attributable to the decrease in fishing intensity which accompanies a temporary tch of part of the effort to mackerel and other fishing (Appendix, Table IV). The seasonal variation andings, from a low of about 9,000 in February to the summer peak of almost 99,000, is also in large asure a reflection of the variation in the amount of fishing. The catch per unit effort is fairly uniform is at its best in about June, when the figure is around 550 crabs per 100 creel hauls. The average ividual weight of crab landed is around 20 oz.

In the case of lobsters, landings rise to maxima in May and September (Appendix, Table III) when the catch per 100 creel hauls for those boats concentrating on lobster fishing is high. being about obsters per 100 creel hauls. Seasonal variation in the number of lobsters landed is to a considerable

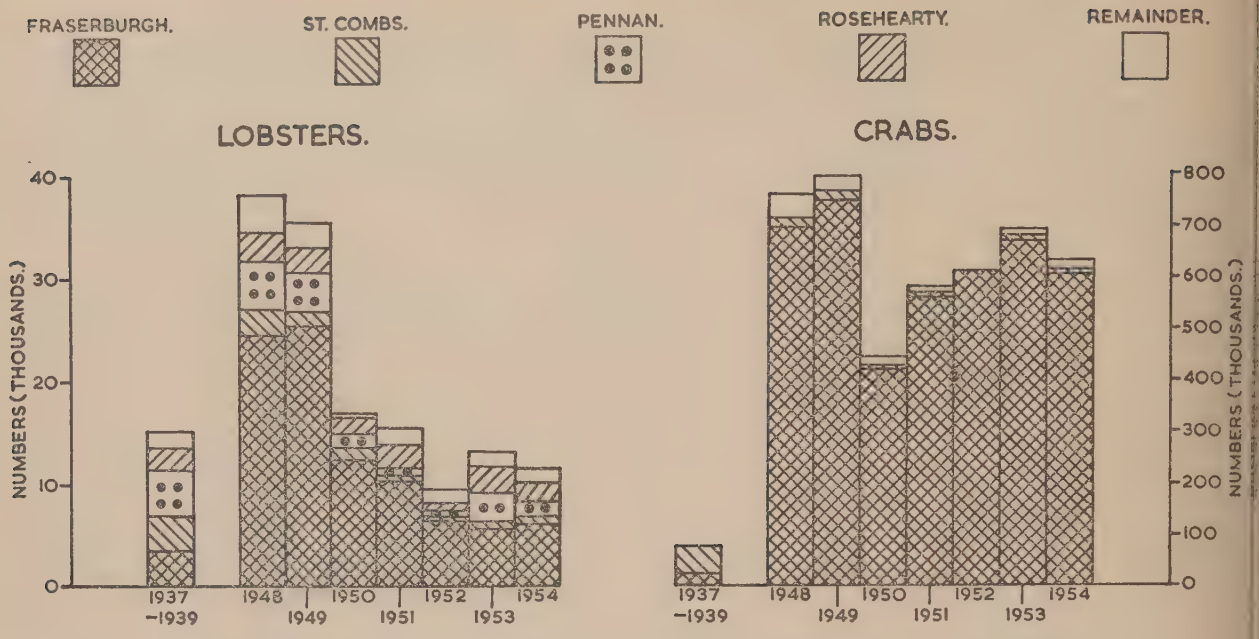

Fig. 15 The annual landings of lobsters and crabs, respectively, in the Fraserburgh Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly averages are also shown.

extent a reflection of the variation in effort. Lobster fishing in the District is largely a part-time occupation and on this very exposed coast is confined to the better weather. During midsummer, however, such labour decreases, being, usually, partly diverted to herring or other fishing. The average weight of lobster landed in the District is about 20 oz.

The post-war landings of crabs and lobsters in the Fraserburgh District are shown in Fig. 15. A marked increase in creel fishing occurred during 1946 and 1947. This was occasioned both by an increase in the number of boats engaged and an extension of the fishing season, in particular in respect of crab fishing. In consequence, landings of crabs in 1948 were at a level over nine times that of the immediate post-war years. Since 1948 they have fallen off somewhat but are still about nine times the pre-war figure. The falling off noted for the District as a whole is, however, largely attributable to a decrease in the fishery at the minor creeks. Landings at Fraserburgh have been maintained and are currently over twenty times those of pre-war.

Lobster landings showed a marked increase in the immediate post-war years to a level about twice that of 1938. The fishery has, however, not been maintained and landings have progressively fallen so that currently they are below the pre-war level. This decrease is common to all creeks of the District.

(*i*) The Southern Moray Firth

Creel fishing in the three Fishery Districts, Macduff (formerly Banff), Buckie and Lossiemouth (formerly Findhorn), is relatively unimportant, and as they have many features in common, the southern Moray Firth (Fig. 1) is here dealt with as a whole.

The combined coastline is about 67 miles, of which the Macduff District with seven creeks comprises 16 miles, the Buckie District with six creeks 10 miles, and the Lossiemouth District with five creeks accounts for the remaining 41 miles. Part of the latter is, however, estuarine. The creeks of all Districts are equipped with harbours (Appendix, Table I), there being only three exceptions, and at these places no landings of lobsters or crabs have been made in recent years.

Creel fishing is almost entirely inshore and is principally directed at the capture of lobsters, although where crabs are taken they are usually marketed. In the case of the Buckie District some boats tend

easonally, to work deeper water, around 10 to 14 fathoms, where crabs constitute a significant proportion of the catch.

Throughout all three Districts fishing is mainly part-time, and is prosecuted by older fishermen or by persons having other employment, either fishing (especially herring fishing between seasons) or ashore. In addition, crews who rely principally on creel fishing for a living, in many cases also undertake other fishing, for example, handlines and mackerel. The effort devoted to the various alternatives depends on the immediate profitability of each pursuit. In consequence, the amount of creel fishing is subject to wide fluctuations but constitutes the main livelihood of certain crews, especially of older fishermen, and certain of these work creels regularly.

During recent years the fishery has been prosecuted from a *total* of about 8 boats in the Macduff District, 7 in the Buckie District and about 15 boats in the Lossiemouth District. Of this fleet of roughly 30 boats, all but two are motored. Except for two boats of about 30 ft., one at Portgordon and the other at Burghead, the majority of landings are made by crews working motored boats mainly of about 24 ft. to 26 ft. overall length. Throughout the area only 15 motored and 2 hand-pulled boats of under 20 ft. overall length are regularly employed. With the exception of one boat from Gardenstown, in none of the three Districts are mechanical creel haulers fitted. Boats are generally worked by two men but may, in certain cases, be operated single-handed. Table X gives the number of boats working creels in the Lossiemouth District for each month averaged over the four years 1950 to 1953 inclusive.

TABLE X

Average number of boats engaged in creel fishing and the average catch of lobsters per 100 creel hauls, by months, for the years 1950 to 1953, inclusive, in the Lossiemouth Fishery District

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Overall weighted average
Boats	3·2	3·0	4·5	6·8	5·5	5·2	8·5	9·8	9·0	6·5	4·8	4·8	6·0
Catch/100 creel hauls . .	41·3	34·3	30·6	24·3	23·4	20·8	32·9	56·3	50·0	51·9	40·2	39·6	40·7

Creels are mainly worked singly, with regular fishermen working up to about 30 creels per man. They are, in general, lifted once every twenty-four hours, although they may, on occasions, be fished twice daily during the summer. Hauling is in most cases regulated by the tide since, for the majority of boats employed, the harbours are not navigable at low water (Appendix, Table I).

Both single and double open-eyed creels are used. Individual fishermen often use some of each type. Creels are braided. The base measurement is about 28″ by 18″ and the height 17″. The inner opening or the eye is round and of diameter about 5½″. Unsalted bait is used, being obtained from seine net boats or from other local fishing activities.

Boats fish grounds adjacent to their home creek and, with very few exceptions, do not work more than four miles from their base. The greater part of the coast of the Macduff District is worked, to some extent, chiefly for lobsters (Fig. 16). Boats of the Buckie District work for lobsters and crabs along the District coastline east of Portgordon. Creel fishing in the Lossiemouth District is mainly for lobsters and is largely confined to the coast west from Lossiemouth as far as Burghead, and in particular Covesea Skerries. There is, in addition, some exploitation of the mixed lobster and crab grounds adjacent to Nairn. The total area of the grounds worked by boats from the three Districts is about 12 square miles. The catch is stored in floating boxes for short periods pending despatch to Billingsgate or other national markets. Individual fishermen are responsible for their own consigning.

Lobsters are landed in greatest numbers during August to November (Appendix, Table III) when also the largest number of boats are working (Table X). The peak months vary amongst the three Districts. Seasonal as well as annual fluctuations reflect varying effort directed at this fishery. The catch per unit effort is at its peak in August being about 56 lobsters per 100 creel hauls. The average individual weight

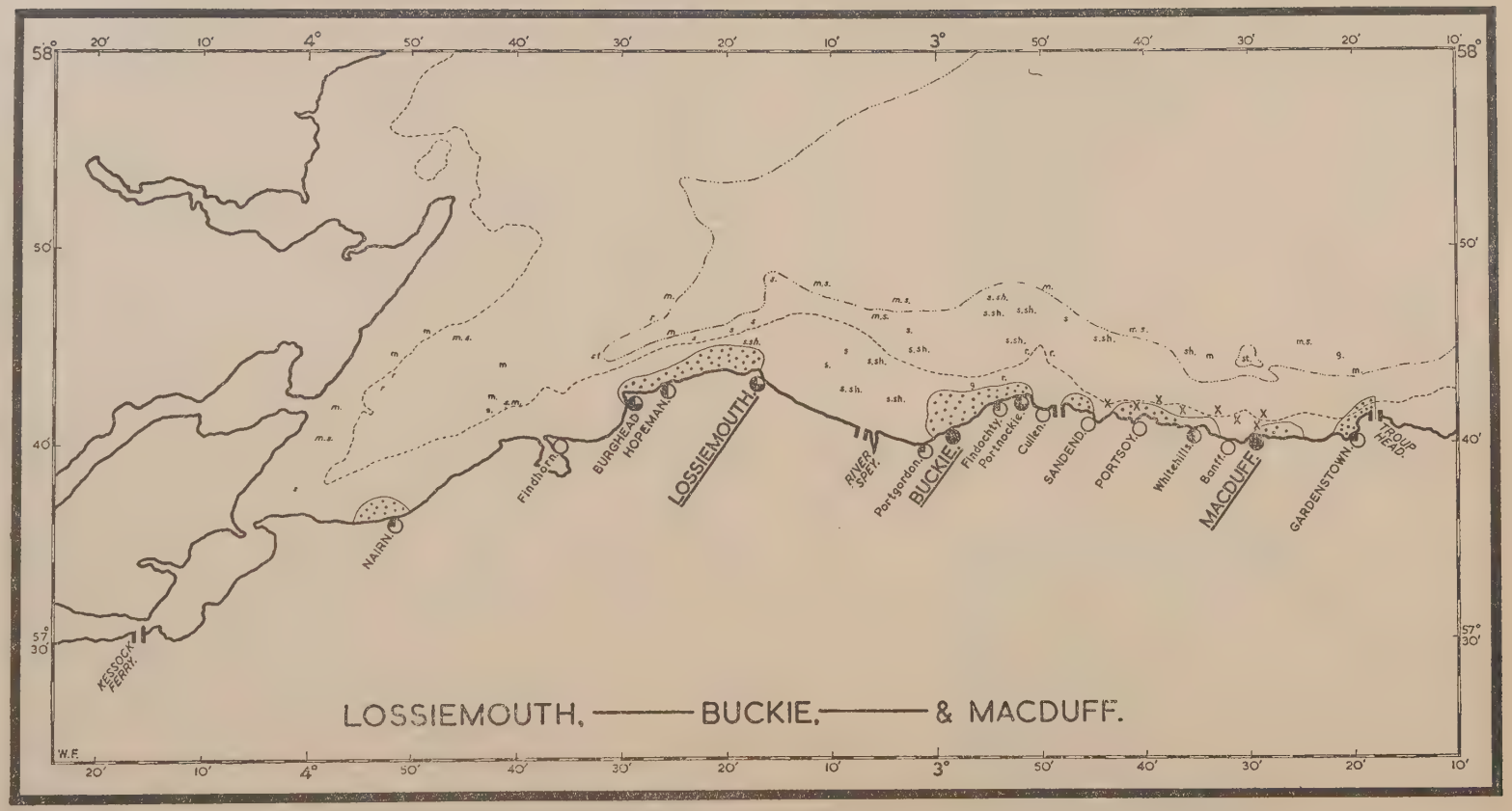

Fig. 16 The Fishery Districts of Macduff, Buckie and Lossiemouth, showing the creeks, harbours, anchorages, etc., together with the fishing grounds and the 1954 landings of lobsters and crabs, respectively. Key as for Figure 6.

obster marketed is around 18 oz. Crabs also are landed in greatest number during the summer. As he case of lobsters, this reflects the variation in effort applied. The average individual weight of crab keted is around 16 oz.

Fig. 17 shows the post-war landings of lobsters and crabs, respectively, in each of the three Districts. nbers of lobsters landed in the years since the war have been running at over twice the pre-war level whilst they are subject to marked fluctuations, they have on the whole been maintained. The overall ure, however, masks a decreasing trend in the Macduff District which is offset by the increasing d in the Lossiemouth District. In the case of crabs, post-war landings were not greatly above those re-war, and the overall tendency during recent years has been for landings to decrease.

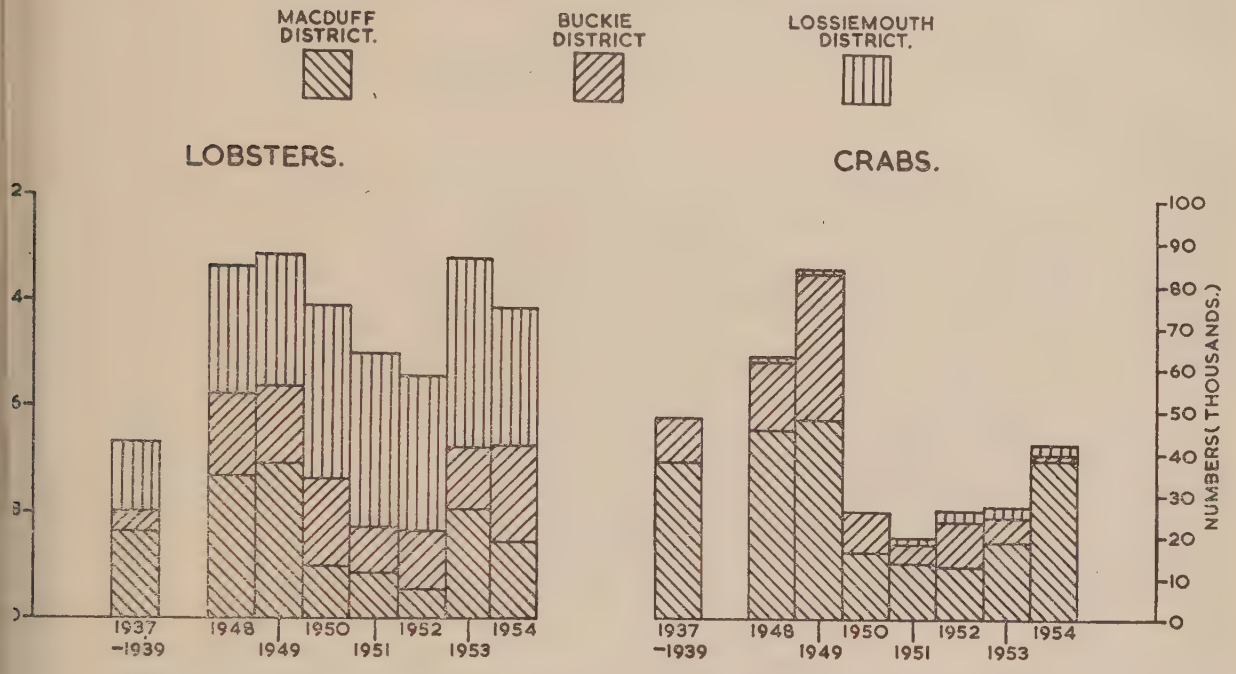

Fig. 17 The annual landings of lobsters and crabs, respectively, in the Macduff, Buckie and Lossiemouth Fishery Districts for the years 1948-1954, inclusive, together with the corresponding pre-war yearly averages 1937-1939.

Helmsdale District

The Helmsdale Fishery District with about 52 miles of sea coastline stretches from Inverness Firth unbeath,[1] and comprises 8 creeks (Appendix, Table I). The area as at present constituted, formerly prised two Fishery Districts, Cromarty and Helmsdale. Creel fishing is directed exclusively at the ure of lobsters and, in most cases, crabs which are caught are not marketed. The few which are sold esent only an insignificant part of the income from creel fishing in the District (Appendix, Table II). majority of lobsters are landed at the creeks of Helmsdale, Brora and Dunbeath. During recent s the fleet has comprised up to 13 boats, mainly of overall length between 18 ft. and 24 ft., all being ored. In no case is a mechanical creel hauler installed. Eight boats are used in creel fishing more or on a whole-time basis throughout the year. The crews of these craft only seldom undertake other ig. The District fleet is augmented during the summer, March to October, by a number of seasonal rmen, as well as in the midsummer months by occasional fishermen having otherwise full-time pations ashore. Table XI gives the mean number of boats working creels in the Helmsdale and Brora s together, for each month, averaged over the years 1950 to 1952 inclusive.

[1] from 1st January, 1957, the southern part of this District, from and including Ardgay, was merged into the Lossiemouth District orthern Part, from and including Bonar Bridge, merged into the Wick District.

Fig. 18 The Fishery District of Helmsdale, showing the creeks, harbours, anchorages, etc., together with the fishing grounds and the 1954 landings of lobsters. Key as for Figure 6.

TABLE XI

The number of boats engaged in creel fishing, the number of creels per boat, the total catch of lobsters and the catch per 100 creel hauls, by months, averaged for the years 1950 to 1952, inclusive, for the creeks of Helmsdale and Brora together

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Overall weighted average
uts	5·0	6·0	5·3	5·3	5·0	4·7	3·7	4·0	5·0	4·3	3·3	5·3	4·7
els per boat . . .	34	30	34	32	34	47	42	44	53	43	31	34	38
al Catch of Lobsters . .	528	539	699	899	516	873	493	943	1273	574	510	994	737
ch/100 creel hauls . .	38·0	40·8	32·8	42·3	30·7	33·2	22·3	37·9	34·1	32·6	41·4	54·0	36·0

Boats are generally worked by two men each fishing about 25 creels in winter and up to 40 in summer. On the other hand, casual fishermen may use as few as 10 creels. Creels are fished singly. During the summer it is customary to shoot well inshore at depths of 1 to 2 fathoms or even less, moving into deeper water of up to about 10 to 15 fathoms during the months October to March. Creels are shot in groups of about 10 or 15 on selected grounds, and are moved at intervals according to the fishing results. In general they are lifted once daily but the Dunbeath fishermen often visit the creels twice during the day, lifting them in the morning to collect the catch and returning in the evening for baiting. This is considered necessary because it is found that, otherwise, the bait is exhausted before the night fishing. The harbours of the District are half-tide and in consequence lifting of creels is regulated by the tide.

Creels are all double-eyed and braided. The base measurement is about 30″ by 22″ and the height 15″. In general, the eye is open and round, with an internal diameter of about 6″. At Helmsdale, however, a minority of the creels are fitted with a hinged shutter of netting on a wire frame, which fits the inner mesh end of the eye to form a non-escape door. The creel eyes in this case are semi-circular in shape, the lower side being flat and the door being hinged at the top. Unsalted bait is preferred and is usually obtainable from local boats engaged in other fishing. Salted herring or mackerel are used as standby baits, especially during winter.

Boats from Cromarty, Balintore, Portmahomack and Golspie work grounds adjacent to the respective creeks (Fig. 18). In addition, grounds south from Tarbat Ness are exploited to some extent by craft from Portgordon and occasionally Brora. In this area the bottom is patchy, and local knowledge is a material help. Northwards from around Brora the coast offshore is generally rocky and is exploited by creel fishermen up to depths of around 8 fathoms and out to about 15 fathoms off Helmsdale (Fig. 18). The area of the grounds covered by boats of the Helmsdale Fishery District is about 35 square miles. Individual fishermen consign their own catch by rail to national markets, chiefly Billingsgate. This applies also to such crabs as are marketed. The catch is stored temporarily in floating boxes and despatched weekly, or more often if numbers warrant, packed with straw or heather. Lobsters are landed in greatest numbers during September (Appendix, Table III), when also the fishing effort is greatest. At this season the number of boats is at a peak as also is the number of creels fished per boat (Table XI). The catch of lobsters per 100 creel hauls, although varying throughout the year, is remarkably uniform and differences are in part, attributable to the variation in the fishing effort. The figure in April and August is around 42 lobsters per 100 creel hauls in respect of the relatively intense fisheries of Helmsdale and Brora, whilst the overall weighted average for the year is 36. At Golspie and elsewhere the catch in September rises as much as 65 to 75 lobsters per 100 creel hauls. The average individual weight of lobster marketed is round 24 oz.

Fig. 19 shows the post-war landings of lobsters in the Helmsdale District. Landings in 1948 were considerably above the pre-war level but these have not been maintained in recent years. In 1946 a maximum fleet of 10 small motor boats and several sailing boats were engaged in the fishery. This fell to 8 in 1947, and 12 in 1948. Creel fishing was formerly carried out on a fairly intensive scale at

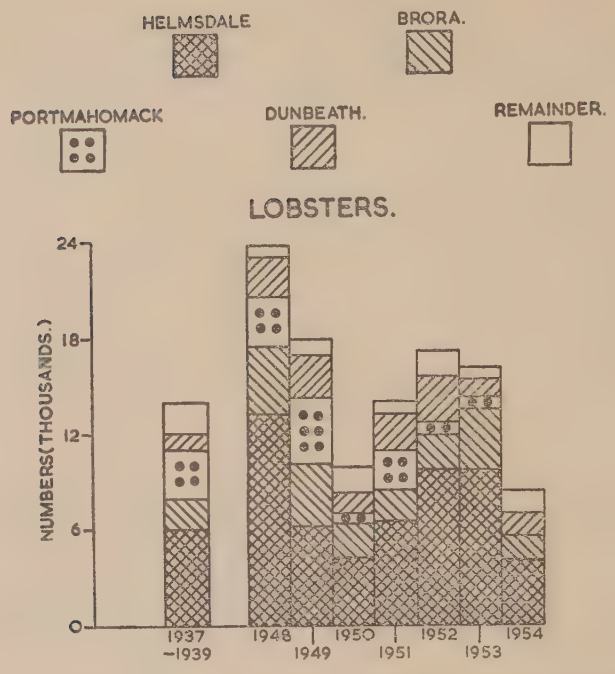

Fig. 19 The annual landings of lobsters in the Helmsdale Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly average is also shown.

Portmahomack but, since 1946, has progressively decreased and no landings were made at this c in 1954. Adverse weather conditions which, in certain years may be prolonged, account for a considerable fluctuation in the yearly total of lobsters marketed. This factor is more pronounced in Helmsdale District, than in the majority of more southerly east coast areas, because a smaller cla boat is, in general, employed.

(*k*) Wick District

The Wick Fishery District, as at present constituted, includes the section of the east coast which formerly separately administered as the Lybster District.[1] The present District of Wick covers ab 30 miles of the east coast and the whole of the north coast of Scotland, being in total about 95 n (Fig. 1). In addition to the extended coastline, its fishery is varied. Although it is wholly included in crofting counties, creels are worked on the east coast mainly by whole-time fishermen supplemented casual operators, but not crofters, as elsewhere on the Scottish east coast. On the north coast, on the o hand, excepting for the main ports of Thurso and Scrabster, creel fishing is almost exclusively underta by crofters. On the east coast the majority of creeks are equipped with harbour works. These are ab on the north coast except for the two above-mentioned ports, although there are some natural harb suitable for small craft. A considerable crab fishery is based on Keiss, Wick, Thurso and Scrab Elsewhere, the industry is devoted exclusively to the capture of lobsters, and in most of these cases crabs as are taken are not marketed.

During recent years the fleet has been composed of about 41 boats, mostly of overall length 2 or less, and nearly half being under 20 ft. (Appendix, Table II). Notwithstanding the small size of t vessels, the fleet is almost entirely motored. Fishing is prosecuted throughout the year by about 12 bo based mainly on Keiss, Lybster and Wick. This fleet is commonly augmented during the period Ma December, inclusive, by a considerable number of seasonal fishermen, the maximum number of b

[1] As from 1st January 1957 the Wick Fishery District was further extended southward to Bonar Bridge at the expense of the fo Helmsdale District.

Fig. 20 The Fishery District of Wick, showing the creeks, harbours, anchorages, etc., together with the fishing grounds and the 1954 landings of lobsters and crabs, respectively. Key as for Figure 6.

fishing during June, July and August (Table XII). Boats from Lybster work for lobsters throughout t year, moving to deeper water in winter. Similarly, a fleet of 6 to 7 boats operates from Keiss at all seas and the crab fishermen from Wick are able to work during the winter by moving offshore into dep of up to 40 or 50 fathoms. These craft, which are engaged in crab fishing, are of 25 to 35 ft. ove length and equipped with mechanical creel haulers. Otherwise, hauling is by hand. In the exposed ar of the north coast, fishing is restricted to the summer, but crofters also work for lobsters sporadic throughout the year on sheltered grounds in Loch Eriboll and Kyle of Tongue.

TABLE XII

The average number of boats engaged in creel fishing in the Wick Fishery District, also the average landings of lobsters and the average catch of lobsters and of crabs per 100 creel hauls in certain sections of the District, by months

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Overa weigh averag
Number of boats for District, average of years 1950-1952 .	10·7	11·0	14·3	14·3	38·3	41·3	40·7	40·3	34·3	27·0	19·7	18·3	25
Landings of Lobsters, E. and N.E. Coasts, 1948-1952	100	183	436	1581	5081	7471	6924	7346	5808	2259	763	325	3190
Landings of Lobsters, N.W. Coast, 1948-1952 .	1333	1527	1621	772	1237	1299	1465	1380	1221	1569	1505	1757	1391
District landings of Lobsters, 1948-1952	1433	1710	2057	2352	6318	8769	8388	8726	7029	3828	2268	2082	4580
Catch of Lobsters/100 creel hauls for the creek of Lybster, 1950-1952, inclusive . . .	21·7	43·0	25·5	37·2	38·9	27·7	19·4	48·3	40·6	38·3	28·2	35·6	3
Catch of Lobsters/100 creel hauls for the creek of Eriboll and Rispond, 1950-1952, inclusive	54·2	59·8	52·0	118·5	88·9	38·2	56·7	37·7	35·6	53·0	49·8	69·9	5
Catch of Crabs/100 creel hauls for the creek of Keiss, 1950-1952, inclusive . . .	235	132	120	114	102	151	216	307	248	329	273	298	21

In general, boats are crewed by two to three men. Crab fishing boats on the east coast are comm worked by a crew of three, whilst with the smaller craft generally employed in lobster fishing, two crew is usual. On the north coast three crofters may work with one vessel, but in this casual fishing do not work simultaneously. At sea, two of a crew is the rule. Other types of fishing are seldom prac by the creel fishermen of this District. Crofters occasionally fish for mackerel and are otherwise occu in agriculture. Part-time fishermen on the east coast are also, in general, alternatively occupied work ashore. Whole-time fishermen are mainly confined to the east coast, Stroma and the por Thurso and Scrabster. The total number of creel fishermen in the District is about 120, of whom 4 whole-time, that is deriving their main income from this fishing; the remainder are principall crofters of the north coast (Appendix, Table II).

Fleets of around 40 to 50 creels are generally worked in fishing for crabs. The separation bet creels is about 12 fathoms. In general, one fleet is worked per man. In fishing for lobsters it is usu work single traps, although certain boats from Lybster and Wick work short fleets of 6 to 10 creels, occasionally up to 20 in the case of the latter port. Smaller boats and part-time fishermen are al invariably associated with single creel working in shallow water. About 30 creels per man are comm worked from the lobster fishing boats of the east coast, Stroma, Thurso and Scrabster. The cr fisherman rarely works more than 25 creels per man, and not uncommonly fishes only 10 to 12 per The gear is, in general, lifted once daily. This is the invariable custom of crab fishermen, and ap

to lobster fishing in winter. In summer, on the other hand, crews from Lybster, and some crofters ıe north coast, occasionally lift twice per day. This is not practicable in areas of strong currents nd the north coast where the time of lifting is regulated by the tides. Fishermen with local knowledge ı: use of the current. The Stroma boats when working grounds to the west of the Island, off the ı coast of Scotland as far as Dunnet Head and off Hoy, run out on the ebb-tide, lift the creels around water, and make the return passage on the flow. The reverse sequence is followed when working 'entland Skerries or grounds to the east of Stroma.

reels are invariably braided and are double-eyed, except for those used in the extreme west of the ict, beyond Loch Eriboll, where they are single-eyed. Apart from this latter area, where creels are in lobster fishing they are generally fitted with a wire, ∩-shaped, non-escape shutter. In crab fishing eyes are preferred. Crab fishermen, in general, work a creel of base measurements about 27″ by nd a height of 16″ with an oval eye of long diameter 7″ and vertical diameter 5″. Lobster fishermen a somewhat smaller pattern, of base measurements about 24″ by 17″ and height 15″ with a round of diameter between 5″ and 6″ according to the locality. Creels are each weighted with a heavy . Where available, that is on the east coast and the north coast as far as Scrabster, unsalted bait d almost exclusively. It is obtained from seine-net fishermen at local or nearby ports. Fishermen, their catch to Wick or Thurso, buy fish offal etc., at these places, for use as bait. In the western of the District unsalted bait, chiefly saithe or mackerel caught by the crofters using lines, is used available. Otherwise, these same baits are used salted.

ıe immediate coastal fringe of the District around and south from Noss Head is worked for lobsters depths of about 12 fathoms. The sea bottom shelves steeply, and this fishing is generally within a one mile of the shore. North from Sinclair Bay, the bottom shelves yet more steeply and only the ds immediately below low-water are worked for lobsters.

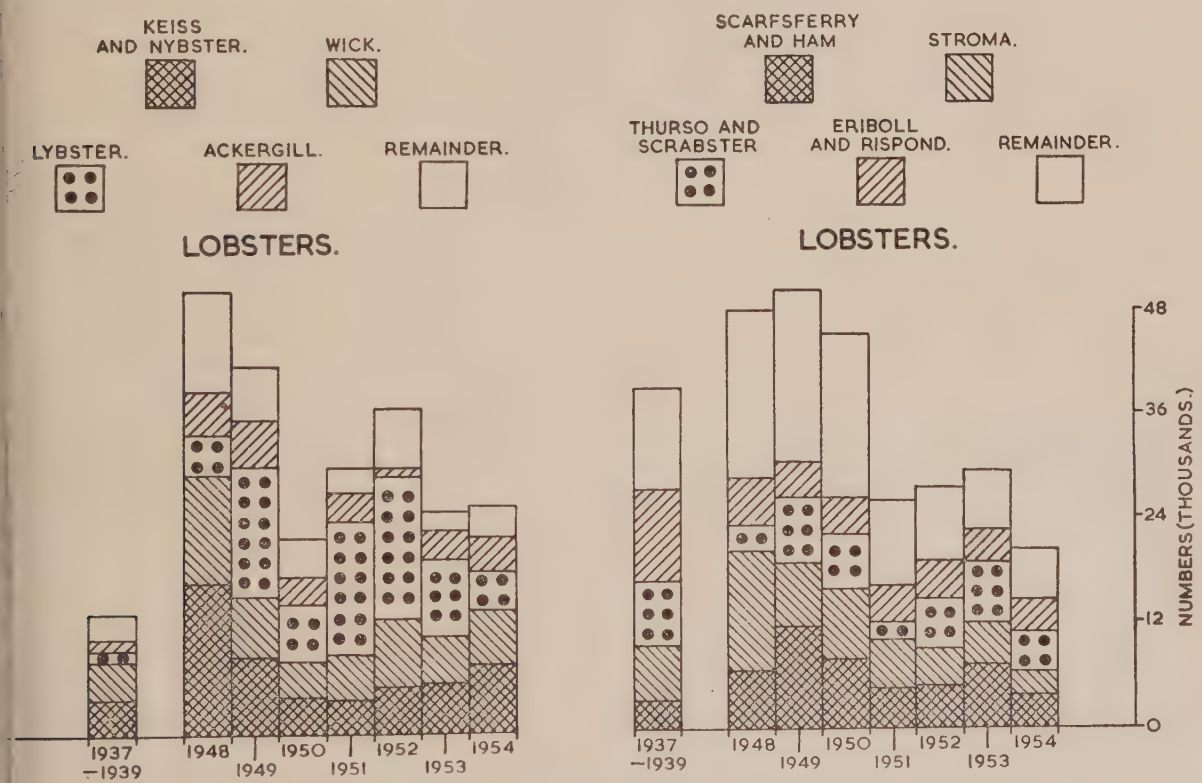

Fig. 21 The annual landings of lobsters in the east and north coasts, respectively, of the Wick Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly averages 1937-1939 are also shown.

Crabs are fished more offshore. The grounds exploited extend from Clythness, at depths of up 20 fathoms, along the coast to Noss Head and beyond that to off Duncansby Head at depths of up 50 fathoms. In summer, crab fishing is prosecuted in depths of as little as 10 fathoms, but, in order prevent loss of gear, the minimum depth usually worked in winter is about 30 fathoms (Fig. 20). B from Stroma fish for lobsters locally and off Swona, the Pentland Skerries and the adjacent Orkney mainland coasts. Crofters of the area from Duncansby Head to Dunnet Head fish their local coast lobsters out to about 12 to 15 fathoms. These grounds also are narrow, due to the steep shelf. Cr caught from this area are marketed. Fishermen from Thurso and Scrabster work local grounds, east f Holburn Head, for both lobsters and crabs. West from Holburn Head the fishery is conducted by cro and is directed at the capture of lobsters only. Such crabs as are taken are not, in general, marke Almost the whole of the narrow coastal fringe is lobster ground which is worked out to 15 or, exceptiona 20 fathoms. The bottom shelves steeply. Crofters generally fish the grounds immediately adjacen their base and do not frequently range farther than two to three miles. They may, however, at ti work up to six miles from their base. Townships are very widely spaced along this coast and, as a re certain parts of the available ground may be fished very infrequently or not at all. Roughly 40 sq miles of lobster grounds are worked in the District of which about 12 square miles are located off east coast. An area of about 35 square miles of crab grounds are fished.

The east coast of the District and the north coast as far as Scrabster are reasonably provided w transport facilities, by road and by rail from Thurso, Wick or Helmsdale (Fig. 1). Crabs are alm entirely marketed to the St. Clair Fisheries' quick-freeze plant at Thurso. This company also rece the majority of the summer-caught lobsters. At other seasons, when prices at the national markets more attractive, many fishermen despatch their lobsters south to Billingsgate, etc. The catch is sto as necessary, in floating boxes, and for despatch by rail is generally packed in sawdust. Fisherme far west as Kyle of Tongue also prefer to market lobsters to the Thurso factory during the summer, at other times they despatch to Billingsgate, as is also the invariable practice in areas further to west. In both these latter regions the catch, usually packed in straw, is transported by bus to the rail at Lairg. Due to the losses frequently sustained in transport during summer, fishermen of these iso places often suspend operations for certain variable periods during June to September.

The number of lobsters landed in the Wick Fishery District as a whole reaches a peak in sum this increase being in large measure a reflection of the increased effort then applied (Table XII). the other hand, this is not the case on the isolated north-west coast, due to the suspension of operat referred to above, during the summer. Landings follow a similar trend to effort, notwithstanding fact that lobsters are more readily caught in warmer water. The catch of lobsters per 100 creel hau Lybster, which is typical of the neighbouring coast, rises to a peak of about 48 in August, but falls a considerably during both the winter and midsummer months, being at a minimum of about 22 lob per 100 creel hauls in January and about 19 lobsters per 100 creel hauls in July (Table XII). Th in contrast with similar data for Eriboll and Rispond, which may be taken as typical of the cro areas of the north coast. At this creek the catch per 100 creel hauls varies irregularly around 52 lob per 100 creel hauls throughout the year. Fluctuations in the catch per unit effort in this area are more to differences in weather conditions and other exterior factors than to fluctuations in the de of the stock. The average weight of lobster marketed also reflects a difference in fishing intensi between the east and north-west coasts. On the east and north-east coasts of the District the av weight is around 26 oz., whilst on the north-west coast it is about 32 oz.

Crabs are landed in greatest numbers during the summer, the peak being in July and A (Appendix, Table IV). This seasonal variation is mainly attributable to the high level of effort applied (see also p. 89). It also coincides with the peak catch per 100 creel hauls which is then ar 300, falling away during the early part of the year to its minimum of about 100 crabs per 100 hauls during April. The catch per unit effort for the creek of Keiss, which may be taken as typical o crab fishery of the District, is given in Table XII. The average weight of crab marketed is about 3

Taking the Wick District as a whole, landings of lobsters in 1948 at nearly 70,000 compare favou with the 1938 level of about 50,000. Landings have, however, decreased progressively in recent and are now below the pre-war level. The District figure for 1954 was about 32,000. These overall

k two markedly divergent trends in respect of the north coast crofter fishery as compared with that e east coast. Fig. 21 shows the post-war landings of lobsters on the east and north coasts, respectively. immediate post-war landings of lobsters from the former area are considerably above those of war, and this is applicable to most of the main creeks but is especially the case for Lybster. Although ings on the east coast have decreased since 1948, they are still well above the 1938 level. On the n coast, on the other hand, immediate post-war landings do not greatly exceed those of pre-war, the decline since 1950 has reduced the number of lobsters landed to well below the 1938 level. This l is more particularly attributable to the crofting areas of the west. In the north-east, Stroma, skerry, Thurso and Scrabster, fishermen have maintained their landings.

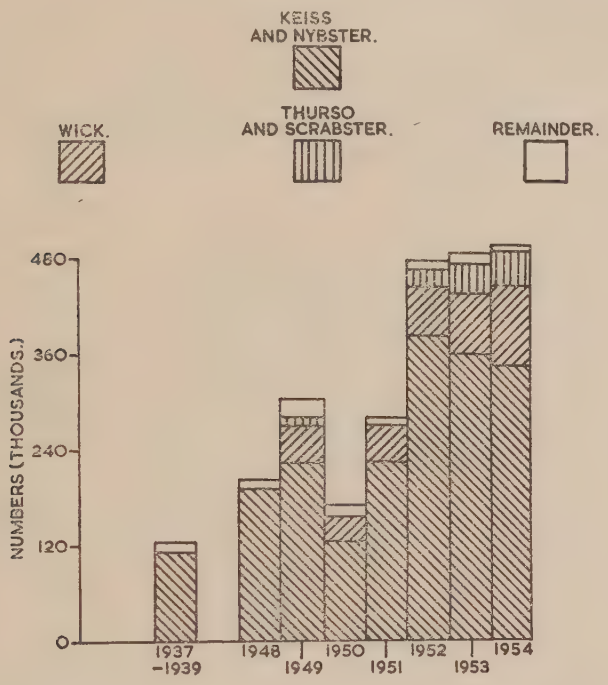

Fig. 22 The annual landings of crabs in the Wick Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly average is also shown.

g. 22 shows the post-war landings of crabs in the Wick District. The annual landings of crabs the post-war period far exceeds the pre-war level, and numbers have continued to rise progressively 1948, being now around 492,000 as compared with about 201,000 in 1948, and 127,000 in 1938. ncrease is almost wholly attributable to the creeks of Keiss, Wick, Thurso and Scrabster.

TABLE XIII

Total number of arrivals and average number of boats engaged in creel fishing working from Keiss, for the years 1949 to 1954, inclusive

Years	1949	1950	1951	1952	1953	1954
Number of arrivals	493	671	927	1356	1428	1354
Average number of boats employed	2·8	3·4	4·5	6·3	6·8	6·7

The operations of the quick-freeze plant at Thurso have had a very material influence on cr fishing in the Wick District, particularly the fishery for crabs. The factory was first opened during 19 and provided a convenient market for crabs and for those lobsters caught during the summer, wh transit losses are usually high and prices low. This outlet considerably stimulated fishing, and was mai responsible for the post-war increase in effort. Table XIII shows the progressive increase in the numb of boats working for crabs from Keiss since 1949. This increase has been matched by an extension of t fishing season which, in 1948, was confined to the eight months April to November, during which peri about six boats were engaged. By 1951 fishing covered the full year for a proportion of the fleet, and 1952, '53 and '54 a minimum of six boats fished throughout the year. The market, provided by t factory, has had a similar effect on landings throughout the accessible parts of the District, for instan crab fishing was undertaken from Lybster in 1953 and 1954 whereas formerly it was incidental to t capture of lobsters. In May 1950 the Thurso factory ceased operations and remained closed until M 1951. The effect of this can be seen (Figs. 21 and 22) in the relatively low level of landings of crabs, a to a lesser extent, of lobsters, from the north and north-east coasts during 1950, and to a certain deg 1951. Since this date the factory has operated on an increasing scale in common with an increased cr fishery.

(*l*) Loch Broom District

The Loch Broom Fishery District extends for about 70 miles south from Cape Wrath (Fig. 1). T whole coast is exploited to some extent mostly by the crofting communities, and the District is typi of this fishing. Townships are widely scattered along the coast. In general, each has some small bea or area where boats can be pulled up on to the shore, and anchorages which can be used for larger bo during fine weather. There are only three harbours in the District (Appendix, Table I). Creel fishin exclusively directed at the capture of lobsters, and such crabs as are taken are not marketed.

Currently, the fleet consists of about 27 vessels, 21 of which are under 20 ft. overall length and without inboard motor (Appendix, Table II). Boats of this size are more readily pulled up on to beach and are easily manoeuvred among the rocks close inshore, where, due to the steep shelving, majority of fishing is carried out. Fishing tends to be irregular, and in total, falls off very considera during the summer (Appendix, Table III). This coincides with the period when transit losses are h and also fits in with the other crofting pursuits. Mackerel fishing is carried out in the season, handlines are worked to some extent, although fishing other than with creels is infrequent.

Boats are, in general, worked by a crew of two but are not infrequently taken out single-hand In some cases a boat may be worked by three men who share the boat although not fishing together. number of crew often varies from trip to trip, according to the other occupations. Creels are n frequently fished singly, although some crews occasionally work short fleets of 10 or 15 creels. W fishing single creels, these are spaced along the shore at intervals of between 12 to 20 yards. The num of creels worked per man varies considerably, being often as little as 10 or 12, but it may be as ma as 30, although this is exceptional. Circumstances permitting, creels are lifted daily, and in some ca during the summer, twice or even three times during the twenty-four hours. In the majority of area this District it is the custom to take creels ashore during the weekend. This enables them to dry but restricts the number of creels which can be worked due to the limited carrying capacity of the b and also curtails the amount of fishing, since, if the weather is bad at the beginning of the week discourages the fishermen from taking his creels to sea before the following weekend.

Although both single and double-eyed creels are used in the District, areas in which the latter employed are somewhat more common. In the same way the size of creel varies locally, and even wi communities. The mean base measurement is about 28″ by 17″ and the height, on the average, rou 14″. The internal diameter of the round eye is, in general, approximately 5″. An open eye is prefer except for the area north of Loch Laxford where a shuttered eye is in general use. The bait m commonly employed is mackerel, which is caught and salted by the fishermen themselves, but sal herring, conger eel, saithe and lythe are also used. In a few places where other fishing also is pursu e.g. Loch Clash, fresh bait is obtainable and is preferred, the determining factor being availability.

Except for the inner areas of the bigger lochs, practically the whole coastal fringe supports a lob

Fig. 23 The Fishery District of Loch Broom, showing the creeks, harbours, anchorages, etc., together with the fishing grounds and the 1954 landings of lobsters. Key as for Figure 6.

population. However, crofters generally work only the grounds adjacent to their township (Fig. As these are often widely separated, on many parts of the coast exploitation is very uneven. Thus extreme north of the District, where there are no townships, is scarcely fished at all and, elsewh areas of exploited grounds are often interspersed with regions of relatively lighter fishing. Exposed a are visited only in the better weather, sheltered grounds being worked at other seasons. In general, coast shelves steeply, restricting operations to a narrow coastal fringe. An area of about 50 square m of lobster grounds is fished in the District. In recent years, in addition to the local boats, the stocks h to some extent, been exploited by larger vessels operating on weekly fishing trips from Mallaig Kyle. Much of the coast, however, shelves too steeply for boats of this size working the somewhat de water.

The catch is stored, pending despatch, usually in sunken boxes as in the sheltered areas near towns there is commonly a risk of fresh land-drainage water overlying the sea water. Where this does not e floating boxes, being more convenient, are preferred. Lobsters are variously packed, in bracken, g rushes, hay or sawdust, or they may have no special packing. Communications in the District are diffi and in many areas it is not practicable to consign more frequently than once weekly. Packages are tr ported to the nearest main road and thence by bus to the railheads at Lairg, Garve or Achnash They are most frequently marketed at Billingsgate by the fishermen individually.

TABLE XIV

Average number of boats engaged in creel fishing, the percentage of the total catch and the average catch of lobsters per 100 creel hauls, by months, for the years 1950-1953, inclusive, in the Loch Broom Fishery District

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Ov weig ave
Boats	17·2	18·2	16·8	13·8	10·2	5·8	7·5	9·0	11·5	16·0	19·0	18·8	13
Landings, Percentage of total . .	10·8	10·4	8·7	7·0	6·3	3·1	3·2	5·4	7·8	9·7	15·7	11·9	
Lobsters, Catch/100 creel hauls .	32·8	31·4	30·8	33·2	35·5	37·9	36·5	43·6	47·6	37·3	40·6	38·2	36

Lobsters are landed in greatest number during November (Appendix, Table III), when als greatest number of boats are working (Table XIV). Effort and landings fall off during the summe latter, during July, being only about 13% of the peak November figure. Boats fish out to abo fathoms during the winter, but in the summer work shallower water, often of only 2 fathoms. In w fishing is generally restricted to the sheltered areas within the lochs, or on the lee side of the land. areas are therefore more heavily fished than the exposed coasts, which are exploited only during sum The difference in fishing intensity is reflected in the weight of lobster. The average for lobsters within the lochs is only about 20 oz. as against an average of 32 oz. for lobsters fished on the o grounds. The overall catch per unit fishing effort (Table XIV) is relatively uniform throughout th at around 37 lobsters per 100 creel hauls.

Fig. 24 shows the post-war landings of lobsters in the Loch Broom Fishery District together wi average of the immediate pre-war years. Whilst the 1948 landings were 31% up on those of 1938, was typical of the immediate pre-war period, there has been a progressive decline in landings in years. The 1953 and '54 figures are little more than half that for 1938. Furthermore, this decl characteristic of nearly all areas. It is mainly the effect of a decrease in effort. Thus, the overall av number of boats fishing for lobsters in 1953 was only 10·6 as against 11·5, 15·2 and 17·1 in 1952, and 1950, respectively. The recent movement away from lobster fishing is in large measure attribu to forestry and work on the hydro-electric schemes and road development, these being more succ in the competition for the limited labour force available.

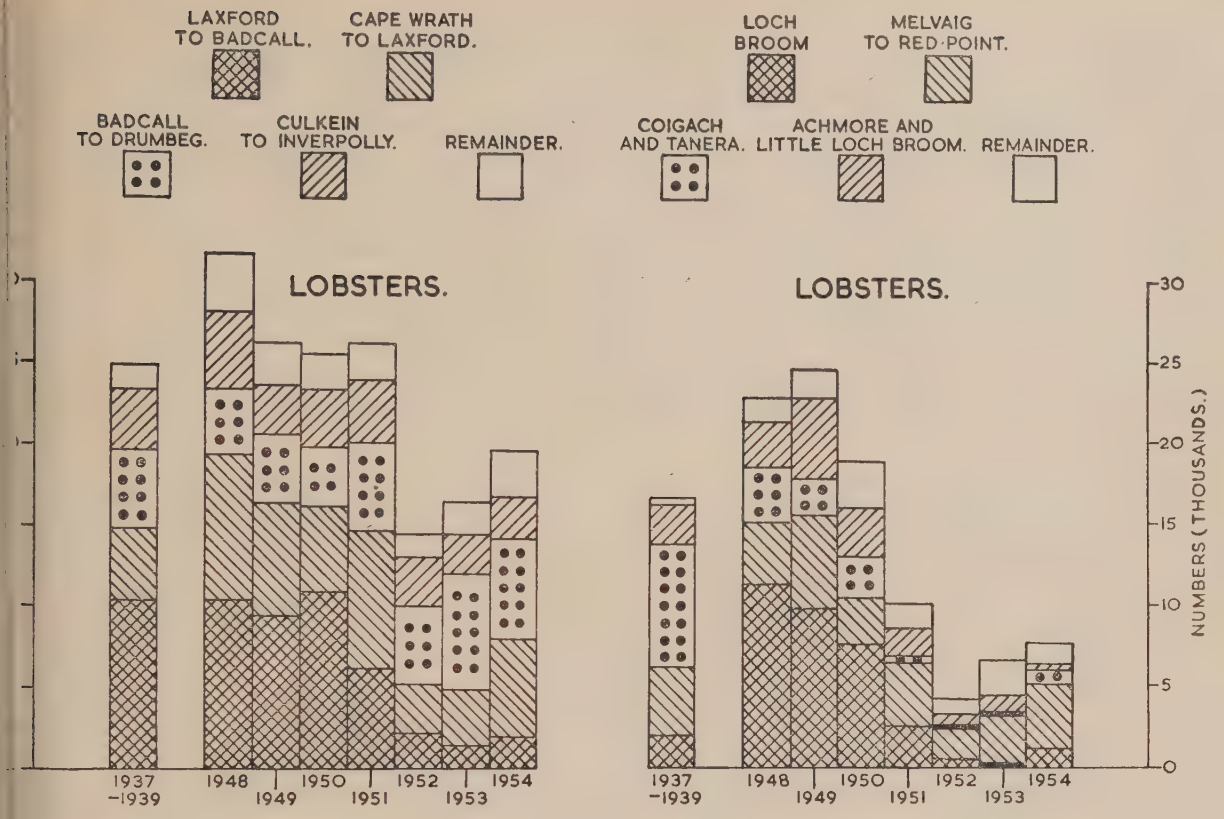

Fig. 24 The annual landings of lobsters on the north and south sections, respectively, of the Loch Broom Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly averages 1937-1939 are also shown.

yle District

.e Kyle Fishery District comprises the section of the west mainland coast from Loch Torridon to Nevis[1] and includes Skye and other adjacent islands. The mainland coastline covers about 40 and that of the islands a further 140 miles, approximately (Fig. 1). The area as a whole is primarily g, but in addition to this fishing there is a large-scale and whole time lobster fishery based on the f Kyle of Lochalsh and also a fishery for crabs. The latter are worked from the creeks of Lochs and Alsh, which are adjacent to the Kyle railhead. Elsewhere lobsters only are landed, and the is undertaken by crofters. In addition to the main ports of Kyle and Portree, the District is ably provided with harbours and piers, and there are many safe anchorages (Appendix, Table I). ring recent years the fleet has comprised a total of about 26 boats, of which 8 are over 30 ft. and nder 20 ft. Of these latter all but two are without inboard motor (Appendix, Table II). Except boats working from Kyle, these craft are used in crofter fishing, following a pattern, in general, to that described in the previous section devoted to the Loch Broom Fishery District. Two local perate from Kyle, and in addition, one or two stranger vessels have regularly used this port during years. These craft of 35 ft. upwards, engage in creel fishing on a whole time basis. Their number en augmented by the occasional ring-net boat which has switched to lobster fishing during the r months, mainly June to October, when herring fishing is less profitable. This practice was lly common during 1952, in which year the landings at Kyle of Lochalsh by the whole time vessels accounted for more than half of the total number of lobsters landed in the District.

[1] om 1st January, 1955, the Kyle Fishery District was extended southwards as far as Morar, thereby including Mallaig, at the of the Oban Fishery District.

Ring-net boats are of about 50 ft. overall length and carry a crew of five or six whole time ac fishermen. They are motored and fully equipped with echometer, winches and living accommodat When working creels for lobsters, they engage in cruises of five days' duration, leaving in the e hours of Monday and returning to Kyle late on the following Friday. On the grounds creels are fis continuously, the vessel staying over them, lifting and reshooting twice daily. In all, about 180 cr are worked in fleets of 20 on a groundrope of 120 fathoms. Shorter fleets of 8 or 9 creels may, howe be shot, to test out doubtful grounds. Also, if results from the first few fleets are not good but s lobsters to be present, the remainder of the fleets may be fished for a longer period. All gear is ship at the end of the cruise and not left out over the weekend. Temporary bases are not set up. The nun of creels worked is therefore limited by the carrying capacity of the boat. This restriction has s compensating advantage since, in conjunction with the practice of remaining over the grounds an all times close to the creels, with relatively short warning of bad weather, such as a rising swell, gear can be lifted and operations shifted to sheltered waters. In this way the loss of time and equipm is minimised.

The large boats from Kyle range widely. They have fished as far afield as the Flannan Islands the west mainland coast to beyond Ullapool. This latter area is, however, very steep-shelving an therefore not very suitable, whilst, being open and exposed to the west, it offers few alternative, shelt areas. For these reasons it is not much visited. The chief grounds are off the Inner and Outer Hebr to the west of Harris and inside Loch Resort, off Scarpa Island, the Shiants, Skye and Rona.

The echometer is used extensively in selecting a suitable bottom, preferably of rock, but m ground has also to be worked. Fishing is carried out in depths of from 5 to 20 or 25 fathoms. Results f the deeper water are found to be comparable with those elsewhere. Grounds are shifted according to fishing results and weather. Lobsters only are retained, the catches being stored in large floating b which are taken on board for the passage to Kyle and in a general move to new grounds.

A large, double-eyed, braided creel of the normal Scottish pattern is used. The base dimensi about 32″ by 18″ and the height approximately 18″. The eyes are open and round, with internal diam of about 5″. The bait employed is salted mackerel, which is purchased.

This fishery exploits grounds and stocks which are not normally otherwise fished. In consequ catches are high in relation to effort, frequently being as much as one lobster per creel per haul. average weight of lobster is about $1\frac{3}{4}$ lb. to 2 lb. The catch is marketed on the Saturday at the end o cruise, the greater part being despatched by the fishermen from Kyle to Billingsgate, packed in shavings or sawdust but without ice. A proportion, however, is sold locally to a merchant at Kyle.

Apart from the operation of these large vessels, lobster fishing in the District is carried on most crofter fishermen. The majority of these now sell their catch at Kyle where a buying organisation established in May 1950. Previously, lobsters had been consigned to Billingsgate by the indivi fisherman.

Lying within the Outer Hebrides, the District coastline is relatively sheltered and the islands th selves offer further protection. In consequence, fishing is possible over a large part of the year. A

TABLE XV

The landings of lobsters, by months, in the Kyle Fishery District over the years 1950 to 1953, inclusive, for the creek of Kyle of Lochalsh, for the remainder of the creeks and for the District as a whole, expressed as a percentage of total landings in each case

	Average number of lobsters per year	Percentage of annual total landings										
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
Kyle of Lochalsh .	9,678	1·1	4·5	2·5	3·2	11·9	7·1	19·6	13·3	14·8	11·8	9·1
Remainder of Creeks (Crofting Areas)	19,996	8·5	6·4	5·8	4·3	6·3	5·7	11·4	18·8	12·9	8·9	6·4
District Total . .	29,674	6·1	5·8	4·7	4·0	8·1	6·2	14·1	17·0	13·5	9·8	7·3

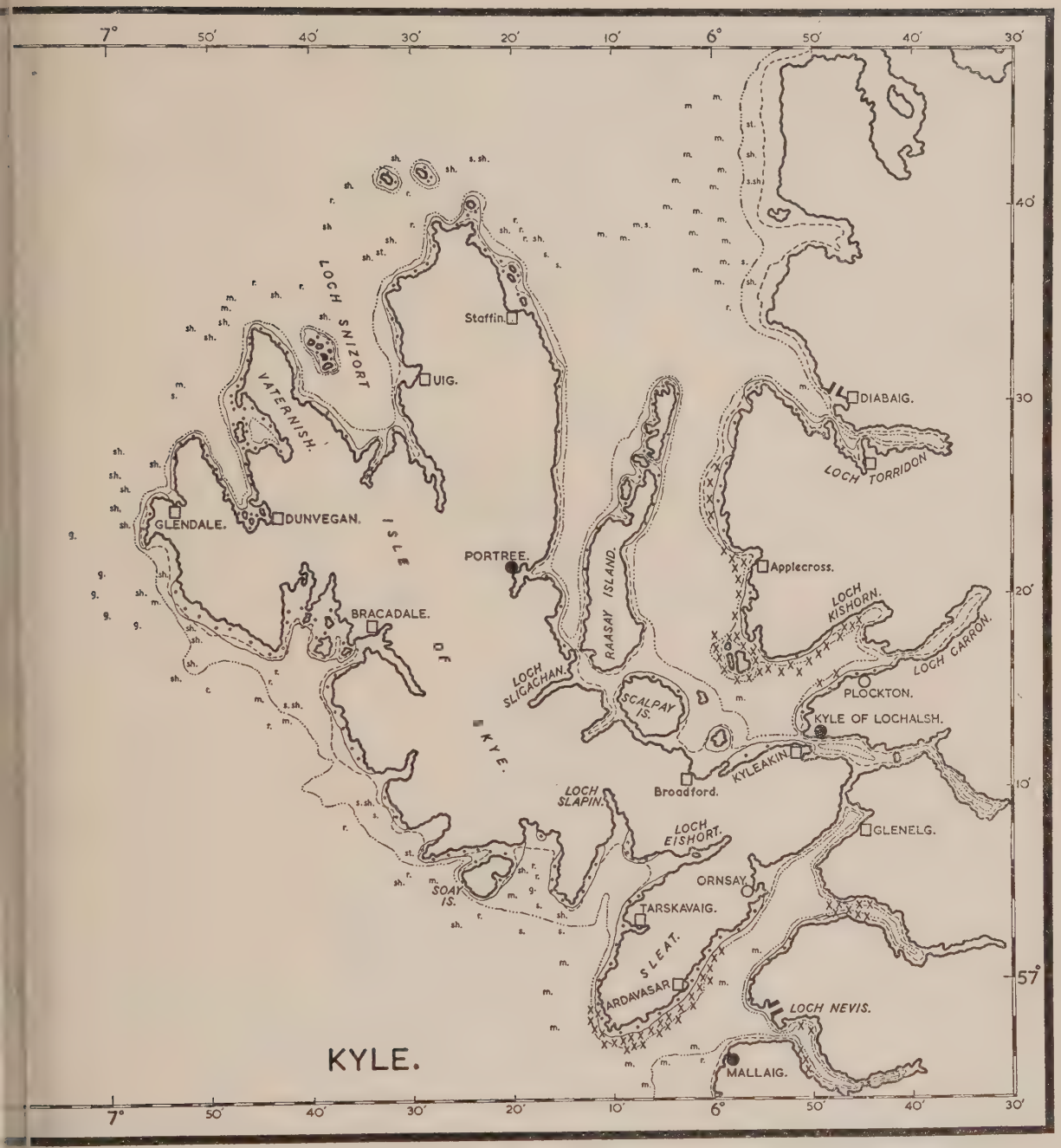

Fig. 25 The Fishery District of Kyle, showing the creeks, harbours, anchorages, etc., together with the fishing grounds and the 1954 landings of lobsters and crabs, respectively. Key as for Figure 6.

creeks of Portree and Raasay and Glendale-Bracadale fishing is prosecuted at all seasons. Forme for instance during 1950, this applied at several other creeks. The summer is, however, the main sea for landings of lobsters by crofter fishermen (Table XV). In this respect the Kyle Fishery District dif from the less accessible Loch Broom District where the landings of lobsters fall off during the summ The railhead at Kyle of Lochalsh enables lobsters to be marketed in summer without undue losses s as would be entailed from the more remote areas to the north. The same seasonal distribution of landi becomes even more accentuated in the case of the large vessels fishing from Kyle, due to the alterna with ring-netting and the advantage in good weather and long days of exploiting more exposed a farther afield grounds with their denser populations.

Most of the District coastline is exploited for lobsters to some extent (Fig. 25), the total a representing approximately 80 square miles. The crofter fishermen generally work close in to the sh within the 5 fathom line, whilst the bigger vessels, prosecuting whole time fishing on weekly cru exploit the deeper water.

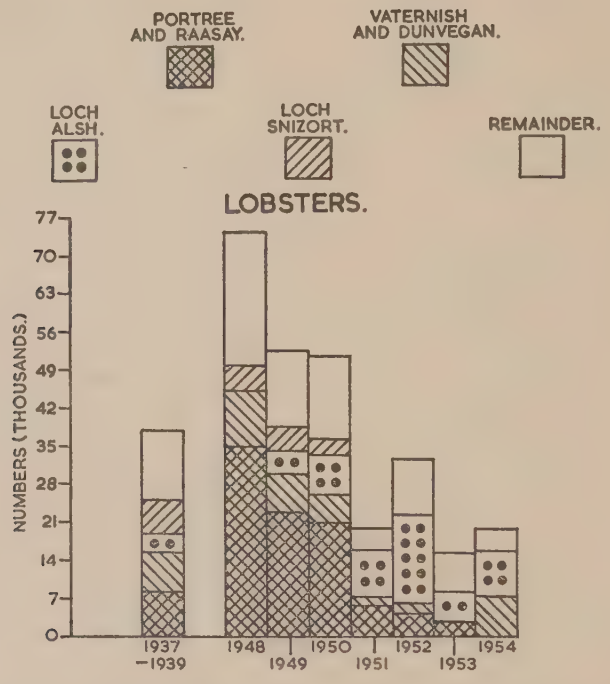

Fig. 26 The annual landings of lobsters in the Kyle Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly average is also shown.

The post-war landings of lobsters in the Kyle Fishery District, together with the correspon data for the immediate pre-war years, are shown in Fig. 26. The landings at about 75,000 in 1948 more than two-and-a-half times those of 1938. This was attributable to an increase in the amou crofter fishing. The large-scale operators had not at that time commenced, and in fact no lobsters landed at Kyle of Lochalsh. Almost all other creeks, representing crofter fishing, contributed to the inc which was especially pronounced in the north and west of Skye and in the Loch Torridon areas. Act was not maintained in subsequent years and, in consequence, landings fell, so that in 1951 less 20,000 lobsters were marketed for the District as a whole whilst of these about 8,700 were attribu to the activities of whole time fishermen from Kyle, leaving less than 11,000 accountable to the acti of crofters. The number of crofter boats working regularly, and also their season, was drasti curtailed, largely on account of alternative and more attractive employment on hydro-electric sch and roadmaking.

)uring the summer crofter fishermen consigning to Billingsgate had often sustained considerable of lobsters in transit. A firm of buyers opened at Kyle in May 1950, since which time most of the r catch has been sold at Kyle and the hazards of transit have not been borne by the fishermen. merchant also supplied boxes, which until recently constituted another difficulty in crofting areas. ithstanding this facility, the extent of crofter fishing has varied little from the 1951 low and is ntly only around 10,000. Landings at Kyle by whole time fishermen increased progressively from to 1952, when they reached about 17,000 (Fig. 26). There was a drop in 1953, due to crews of ger boats, which had previously landed at Kyle, by-passing the port in favour of Mallaig. The state of central markets in the season of 1953 cut the profits of high cost ring-net boats operating , and a marginally better price was available from buyers at Mallaig. Seasonal operations by ring-net at Kyle and similar activities on a larger scale from Mallaig resulted in very heavy landings during immer. This itself depressed the price and largely rendered the fishing uneconomic. In consequence, fishing by ring-netters was on a reduced scale during 1954. However, the whole time creel fishermen ng from Kyle all the year round continued to operate successfully and in 1954 the total landings le were maintained at about 8,000 lobsters.

he crab grounds of the District, of which about 26 square miles are currently exploited, were little worked before the war, mainly because of the heavy mortalities sustained during transit to gsgate, particularly during summer months when creel fishing is mostly prosecuted. The same operated in the immediate post-war years, although high prices had a stimulating effect. This however, temporary. In 1948 and 1949 landings were made by a few small boats, from Loch n, which fished intermittently in Loch Kishorn and off the Crowlin Islands and Applecross. The nt of this fishing decreased progressively and no landings were recorded in 1951 (Table XVI).

TABLE XVI

The number and value of crabs landed in the Kyle Fishery District during the years 1938 and 1948-1954, inclusive

	1938	1948	1949	1950	1951	1952	1953	1954
No.	—	25,380	16,530	500	—	35,910	49,825	83,331
Value	—	£805	£639	£12	—	£873	£1,241	£2,393

ıe processing plant at Thurso commenced taking supplies from Kyle in 1952, and under this us two motor boats were used in crab fishing during the summer and autumn of 1952. These two continued fishing on a more intensive scale in 1953 and in consequence landings increased. In a further outlet was the processing plant at Berwick-on-Tweed. Under the effect of this competition ice almost doubled (Table XVI) and an extended and intensive fishing developed. The District grounds (Fig. 25) were also worked to some extent by boats from Mallaig. In 1954 three vessels Kyle and one from Loch Carron worked creels exclusively on the crab grounds between Skye and ainland. Of these boats three were about 40 ft. in length and the other 25 ft. overall length. The d adopted in this fishing is similar to that of the Mallaig boats, and is fully described in the section ed to the Oban Fishery District.

BAN DISTRICT

ıe Oban Fishery District extends south from Loch Nevis[1] to Oban, both inclusive, together with ljacent islands, lying between Rhum and Mull (Fig. 1). The mainland coastline is effectively about les long whilst the islands add a further 160 miles. The district as a whole is similar to that of Kyle ng primarily crofting. As with Kyle, the presence of a railhead and the associated port at Mallaig

[1] rom 1st January, 1956 the Oban Fishery District was curtailed, the northern part as far as and including Mallaig being trans- to the Kyle Fishery District. Further, as from 1st January, 1957, the Oban District was extended southward as far as Crinan, e, at the expense of the former Tarbert District.

OBAN.
LOCH LINNHE
LOCH ALINE
LOCH SPELVE
LOCH BUIE
LOCH SCRIDAIN
ISLAND OF MULL.
TOBERMORY.
Salen.
Kilchoan.
Ardtoe.
LOCH MOIDART.
LOCH AILORT.
ARISAIG.
LOCH MORAR.
MALLAIG.
LOCH NEVIS.
EIGG ISLAND.
RHUM ISLAND.
MUCK ISLAND.
CANNA ISLAND.
COLL ISLAND.
TIREE ISLAND.
ULVA IS.
IONA IS.
Bunessan.
OBAN.

ve resulted in the development there of a large-scale creel fishery including both lobsters and crabs.) a much less extent, there is also a whole time fishery for lobsters based on the port and railhead of ban, which is used extensively by stranger vessels fishing for lobsters. In addition to these and to other rts, the area possesses several good harbours and numerous safe anchorages serving the crofter wnships (Appendix, Table I). Crofter fishing is exclusively devoted to the capture of lobsters, as also s all creel fishing in the District during and prior to 1953. In 1954, however, an extensive whole time ab fishery from Mallaig was developed.

Currently the fleet consists of about 25 vessels, of which 9 are more than 30 ft. overall length, 8 of se being registered at Mallaig. Sixteen, that is more than half the boats of the District, are of less than ft. overall length, and these are associated with crofter fishing (Appendix, Table II). Notwithstanding ir number, these boats accounted for less than one-fifth of the District total for lobsters landed during e years 1950 to 1953, inclusive. Landings at Mallaig represented about 71% of the total whilst Oban counted for a further 12% approximately. These latter were largely attributable to stranger vessels. me stranger boats also operated from Mallaig, where the fishing by local boats was further augmented the seasonal activities of ring-netters. In 1952 three ring-net boats fished creels during the summer m this port. The number increased to six working for lobsters during July, August and early September 1953. Ring-net boats did not turn to creel fishing on any large scale in 1954.

In 1953 and previous years, lobsters only were landed in the District but, in 1954, under the impetus a very favourable price offered by a processing firm from Berwick-on-Tweed, who also collected by ry at Mallaig daily except Saturday and Sunday, a considerable and prosperous crab fishery was dertaken from this port during the months September to December, inclusive. Seven boats of length ft. and 45 ft. were so engaged.

The Mallaig fleet of six boats, of about 40 ft. overall length, engage in creel fishing on a whole time is. They work throughout the year except for about ten weeks in January, February and March, en they are prevented by weather and use this time to overhaul boats and gear (Table XVII). ring this period some crews engage in line fishing. The boats are manned by an active crew of generally ee, or occasionally four, fishermen. The craft are motored and equipped with mechanical creel ilers and living accommodation. Two of the vessels also carry echosounders. Lobster fishing is under- en on weekly cruises, Monday to Friday, the vessels remaining over the creels. These are lifted generally y once daily. In all, about 160 to 200 creels are fished in fleets of about 20. They are spaced at intervals about 12 fathoms along the groundrope. Temporary bases are not used.

These boats range widely and fish the whole of the north-west of Scotland, the Outer Isles and the nnans (Fig. 1). The main grounds, however, are around the islands between Ullapool and Jura, luding the east and west sides of Barra, Uist and Harris. The more distant grounds are generally rked during the summer. The islands make it possible usually to find alternative sheltered areas.

Creels are usually shot amongst rocks at around low-water, when it is possible to see and choose uitable bottom. Depths of from 2 to 12 or even up to 18 fathoms are worked, the latter usually by the ts carrying echosounders. Fleets are generally shot in batches and grounds are shifted to some extent ly, according to fishing results, unless weather necessitates a complete change of area. Lobsters only retained and these are stored in floating boxes.

Fishermen make their own creels which are all double-eyed and braided, with a base measuring about by 18″ and a height of 16 ″. The eye is open, with an internal diameter of about 5″. All creels are ghted with heavy sinkers. The bait employed is invariably salted, and mackerel is preferred. ernatively, white-fish offal is used. The bait is purchased at Mallaig. The average weight of lobster ded is about 1½ lb. During September, when the best results are obtained from the less frequently ted grounds, the catch averages over 80 lobsters per 100 creel hauls (Table XVII). The lobsters are rketed at the end of each cruise, the majority being sold to merchants buying at Mallaig. Some are vever, consigned to Billingsgate, and these are packed in wood shavings or sawdust. Ice also is used ome cases during hot weather.

In addition to the 40 ft. vessels, ring-net vessels of overall length 50-55 ft. turned to lobster fishing ing the summer months of 1952 and 1953. Their methods follow closely those already described for ring-netters operating from Kyle of Lochalsh (p. 48). About 200-250 creels are worked by a crew of

five or six men, who engage in weekly cruises. There are also three small vessels which are used in creel fishing for lobsters from Mallaig by the day. These are worked on a part-time basis by one or two men per boat. A total of about 20-30 creels are fished from each vessel in fleets of roughly 10 in depths of up to 6 fathoms on the local grounds. Hauling is by hand. These boats operate from April to October but account for only a small proportion of the lobster landings at Mallaig, a further, though minor, proportion of which are attributable to the occasional stranger vessel working from the port during the summer and fishing by the week.

In post-war years a number of stranger vessels have regularly fished from Oban during the summer and autumn months (Table XVIII). These have been responsible for most of the lobster landings at the port. They are large craft of 35 ft. or more, mostly from the Firth of Forth area. Landings are also made at Oban by a 34 ft. boat from Arisaig. These craft are all occupied in large-scale fishing on weekly cruises in much the same manner as the Mallaig fleet. There is no significant creel fishery by Oban boats. Apart from Oban and Mallaig, which account for the greatest part of the landings, creel fishing in the District is almost entirely attributable to crofters, who work irregularly from small boats during the summer and autumn months using up to 30 creels.

Throughout the District, lobster fishing is at a higher level during the summer and autumn and in particular during August and September. This is especially true in the case of the crofter boats and at Oban (Table XVIII). The catch per 100 creel hauls, as exemplified by the crofter fishery at Coll, is fairly uniform throughout the year, but more boats are occupied during the summer (Table XVII). At Mallaig, on the other hand, the catch per 100 creel hauls is markedly greater in August and

TABLE XVII

The average number of boats engaged in creel fishing and the average catch of lobsters per 100 creel hauls, by months, for the years 1950 to 1953, inclusive, at Mallaig and in the crofting areas of the Oban Fishery District

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Overall weighted average
Average number of boats	Mallaig	0·2	0·5	4·0	5·7	7·5	8·2	8·0	9·7	9·2	6·5	6·0	4·2	5·8
	Crofting Areas	0·2	1·2	0·8	3·8	7·8	13·0	16·8	16·8	15·0	10·5	4·0	4·5	7·9
Catch/100 creel hauls	Mallaig	30·3	22·7	37·4	43·1	47·6	55·2	52·0	78·1	81·7	65·1	54·1	36·2	59·1
	Coll	—	—	42·9	40·5	30·0	22·0	34·7	59·3	44·0	36·7	—	—	42·5

TABLE XVIII

The landings of lobsters, by months, in the Oban Fishery District, over the years 1950 to 1953, inclusive, for the creeks of Mallaig, Oban, the remainder and for the District as a whole, expressed as a percentage of total landings in each case

	Average number of lobsters per year	Percentage of annual total landings											
		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Mallaig . . .	87,530	0·1	0·1	1·2	5·1	7·4	10·0	14·5	16·9	18·3	15·4	8·2	2·7
Oban . . .	14,501	0·8	0·7	0·4	0·7	14·2	17·6	13·1	15·9	18·0	10·3	5·4	2·9
Remainder of creeks (Crofting area) . .	20,709	0·1	0·4	0·5	2·9	6·2	11·1	18·6	23·9	20·3	9·3	4·2	2·4
District total . . .	122,740	0·2	0·3	1·0	4·2	8·0	11·1	15·0	18·0	18·6	13·8	7·2	2·7

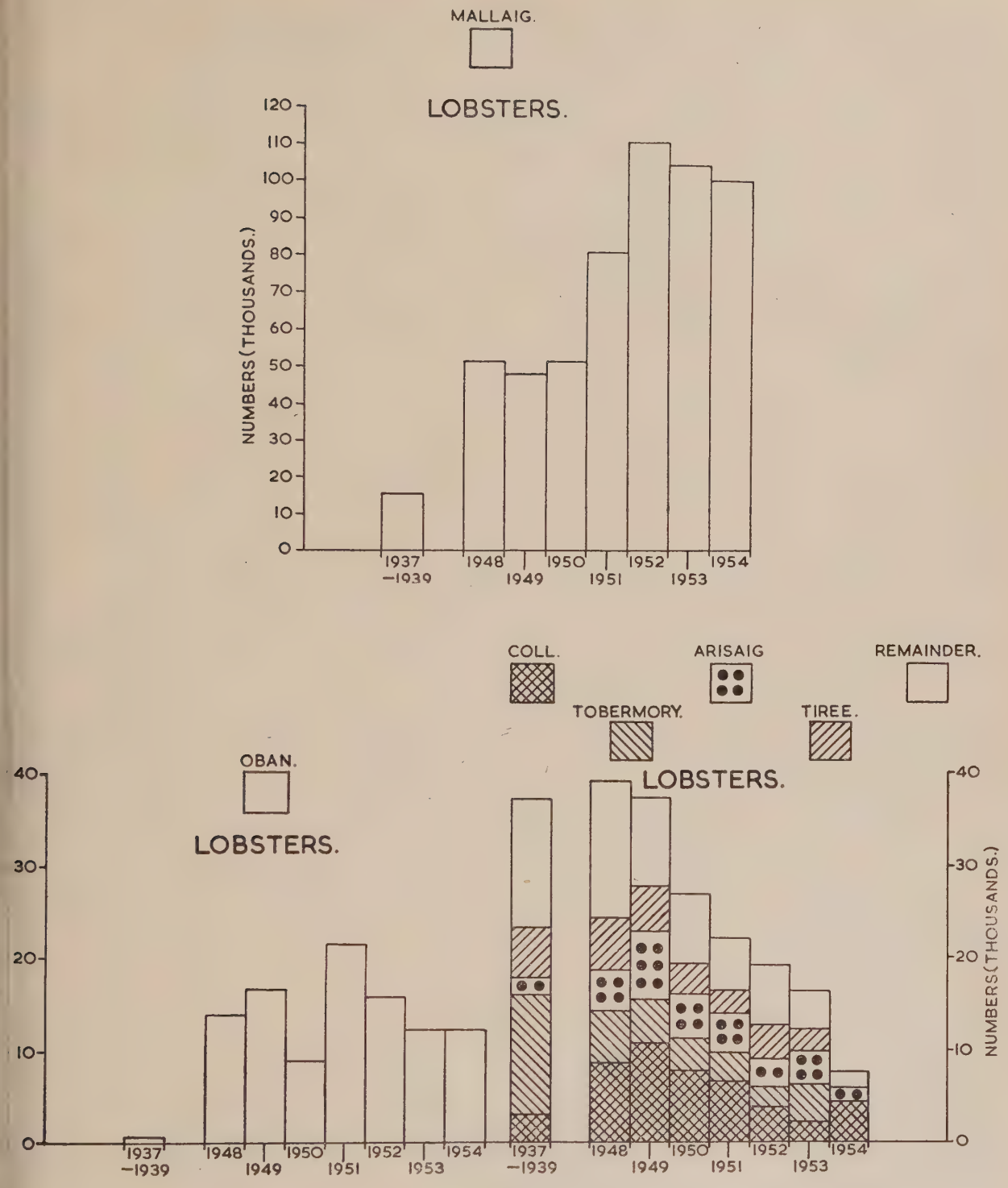

Fig. 28 The annual landings of lobsters at Mallaig, Oban and the remainder of the Oban Fishery District, respectively, together with the component landings at certain other creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly averages 1937-1939 are also shown.

September. This results from the fleet working where the populations are less exploited than those fis at other seasons. For this reason and because more boats are then working, including the seasonal in of ring-netters, the numbers of lobsters landed at Mallaig are greatest during July to October.

Almost the entire District coastline is exploited for lobsters (Fig. 27). In general the coastal fri shelves less steeply than that of the mainland to the north and therefore offers a larger area of suit grounds. About 160 square miles are fished for lobsters.

During the months September to December of 1954 the Mallaig fleet switched to crab fishing. Se boats of 33-45 ft. were engaged on a whole time basis. The area mainly worked was to the south south-east of Skye (Fig. 27), but the east of Skye was also worked to some extent (Fig. 25). The s creels and similar methods were used as for the lobster fishing, except that fleets of from 50 to 60 cr were adopted. These were shot mainly in depths of from 10 to 20 fathoms. Fresh bait was invaria used, dogfish being preferred, but fresh fish offal was the alternative. Landings were made dail Mallaig. Using about 200 creels, the daily catch ranged between 50 and 130 stones. The whole of landings were bought on the quay by a processing firm from Berwick-on-Tweed, who transported crabs daily by lorry at the firm's risk. This fishery is entirely new and arose in response to the enhan price offered and the shifting from the fishermen of the transport risks. A total of about 280,000 cr valued at £39,822, was landed during 1954.

The post-war landings of lobsters in the Oban Fishery District, together with corresponding for the immediate pre-war years are shown in Fig. 28. The landings at Mallaig in 1948 to 1950 were over three times those of 1938, this being attributable to the increased activity. During 1946 four c devoted their full attention to creel fishing; in 1948 seven boats were so engaged; in 1952 the fleet augmented by two ring-net boats operating during the summer; and in 1953 six ring-net vessels, in add to the regular lobster fishing fleet, were seasonally engaged. In consequence of this increased effort, lan during 1951 to 1953 increased further (Fig. 28), and in 1952 and 1953 stood at more than twic 1948 to 1950 level. In spite of the fact that no ring-net boats were engaged in creel fishing during and that the bulk of the Mallaig fleet switched to crab fishing in the later part of the year, landin lobsters at about 100,000 were almost maintained.

Post-war landings of lobsters at Oban were at a high level. They tend to vary from year to year differences in the number of stranger vessels operating. Landings in 1938 were negligible (Fig. 2

Excluding Mallaig and Oban, the remainder of the District represents crofter fishing. The landings were around 36,500 lobsters. This level was representative of the pre-war years. A compa figure, 37,500, was attained in 1949, since which time the numbers of lobsters landed have progressively, and in 1954 were less than about 10,000. This decrease is attributable to the falling e In recent years no landings have been made at Loch Scriddan, Ulva and Iona, at all of which c more than 2,000 lobsters were landed in the year 1938. Only at Arisaig have post-war landings roughly maintained, and these are largely attributable to the efforts of whole-time fishermen r than to crofters (Fig. 28).

(*o*) Campbeltown District

The Campbeltown Fishery District (Fig. 1) comprises about 65 miles of mainland coast aroun Mull of Kintyre,[1] together with the islands of Colonsay, Jura, Islay and Gigha, which effec provide a further 120 miles. The mainland harbours are at Campbeltown and Carradale, and on at Portaskaig and Port Ellen (Appendix, Table I). Landings of lobsters from the creeks on the i of Islay are about equal to those of the mainland with the nearby island of Gigha, and together account for practically the whole of the landings in the District. Although the area comes with crofting counties, the fishermen are not typical crofters, but work mainly seasonally on a whole basis, while the majority of part-time fishermen have other paid work ashore. Lobsters are take grounds adjacent to the creeks, in depths from low-water up to about 12 fathoms. The fleet curre composed of about 27 boats, of which roughly half are fitted with inboard motors and are of 20- overall length, the remainder being smaller craft. Eight of the 20-30 ft. boats, five being motored, b

[1] As from 1st January, 1957, the Campbeltown District was extended northwards as far as Crinan, inclusive, and southwards as Roseneath Point, including the Islands in the Firth of Clyde, both at the expense of the former Tarbert District.

Fig. 29 The Fishery District of Campbeltown and parts of the Tarbert Fishery District, showing the creeks, harbours, anchorages, etc., together with the fishing grounds and the 1954 landings of lobsters. Key as for Figure 6.

to the island of Islay (Appendix, Table II). Fishing is undertaken for the greater part of the year from March to December, inclusive, but is on a more intensive scale during summer and autumn (Appendix, Table III).

The bulk of the landings are made by the larger motored boats, which engage principally in creel fishing. Two of a crew is usual, though occasionally a boat is worked single-handed. Creel fishermen do not engage to any great extent in other types of fishing except occasionally to catch bait. About 25 to 30 creels are worked per man. They are shot singly but in batches, and shifted a little most days, the extent of the movement depending on fishing results. Lifting is carried out once daily, or exceptionally, twice during September. The catch is stored in floating boxes pending despatch to market. Fishermen consign individually, mainly to Billingsgate. Lobsters are generally packed with bracken or sawdust. The average weight of lobster landed is about 28 oz.

Single-eyed creels are most common in the District. They are small, with a base measurement of about 21″ by 15½″ and a height of roughly 13″. The internal diameter of the round eye measures approximately 5″. Fresh bait, commonly saithe, mackerel, herring or lythe, is employed where possible. It is in part caught by the fishermen or otherwise purchased.

Much of the District coastline is exploitable, but the grounds mostly worked are those adjacent to the creeks. The total area so exploited is around 180 square miles (Fig. 29).

Landings of lobsters in the post-war period were almost twice those of the immediate pre-war years (Fig. 30). They attained a peak of over 65,000 in 1949, but since then have fallen off consequent upon the decrease in fishing effort. In 1952 they fell to around 22,000 and have since been maintained around this level.

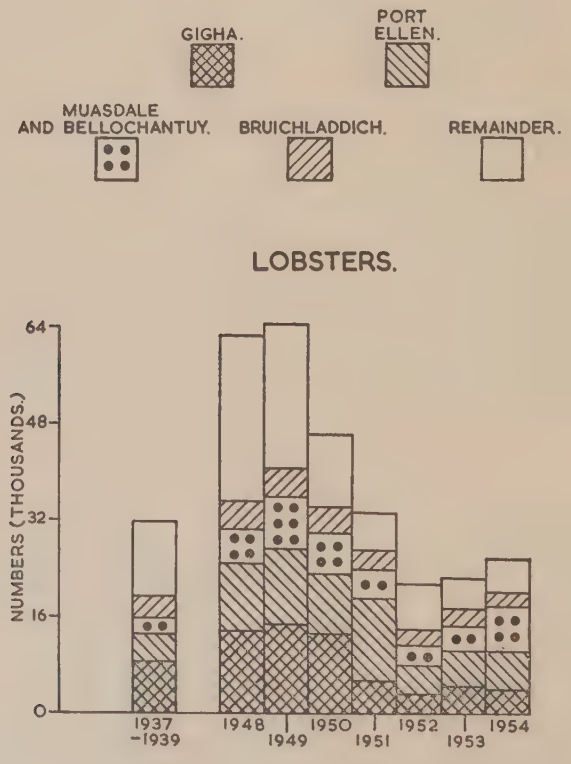

Fig. 30 The annual landings of lobsters in the Campbeltown Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly average is also shown.

Tarbert District

The Tarbert Fishery District, with effectively about 150 miles of sea coastline, including the islands Bute and Arran, incorporates the two former Districts of Inveraray and Rothesay.[1] Fifty miles, luding the island of Luing, is on the open west Scottish coast, the remainder is situated in the Firth Clyde and its associated lochs. Currently, creel fishing is prosecuted from only five creeks, all of which e good harbours (Appendix, Table I). Lobsters only are landed, being fished mainly on a part-time is by a fleet of about 14 vessels, all of which are under 30 ft. overall length, 8 of these being under ft. All the craft are motored (Appendix, Table II). The area affords abundant shelter, and some ing is carried on throughout the year but as is usual where the industry is largely part-time, it is at uch higher level in the summer and autumn (Appendix, Table III).

Whilst the District is wholly included in the crofting counties, creel fishing by crofters is at present gnificant. Formerly Luing accounted for the bulk of the District landings but of recent years these e greatly diminished. Crofter fishing is confined to this creek and even here represents a part only. stering is not a major occupation in the District whose boats are responsible for only a proportion he creels worked. In 1954 over a quarter of the total landings were attributable to stranger vessels, tly from Ayr, exploiting the District coastline and landing at Lamlash. Such activities have for many rs been a major factor in the lobster fishery of the District.

The Luing fishermen work boats of about 20 ft. single-handed or in pairs. These operations are rently part-time, fishermen having a paid job ashore or crofting. In the District as a whole, about 30 ls per man are worked, either singly or occasionally in short fleets of up to 12 creels, on grounds acent to the creeks and at depths of up to 8 or 10 fathoms. The total area worked is about 86 square es. Creels, which are mostly single and open-eyed, are lifted once daily. The chief baits are mackerel, he or fish offal, the former being caught on lines by the fishermen themselves, the latter being chased. Fresh bait is preferred on the west coast, whilst elsewhere, salted bait is used exclusively.

[1] As from 1st January, 1957, the northern part of the Tarbert District from, but not including Crinan was merged with the Oban ry District and the remainder of the Tarbert District was merged into the Campbeltown District.

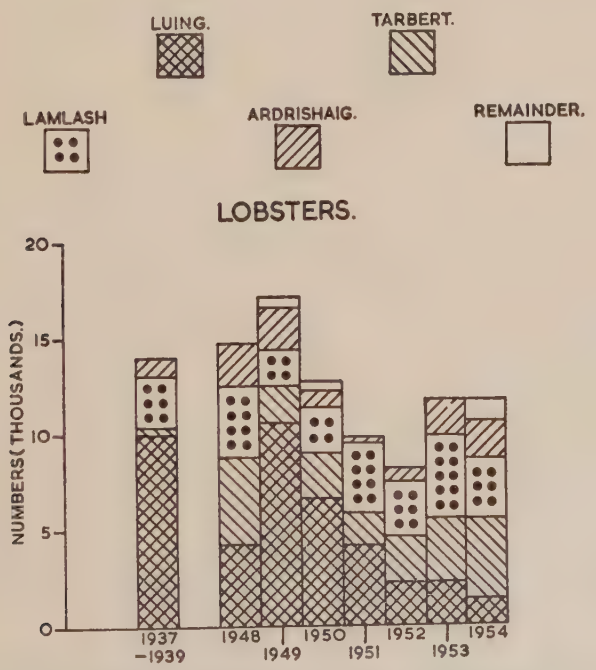

Fig. 31 The annual landings of lobsters in the Tarbert Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly average is also shown.

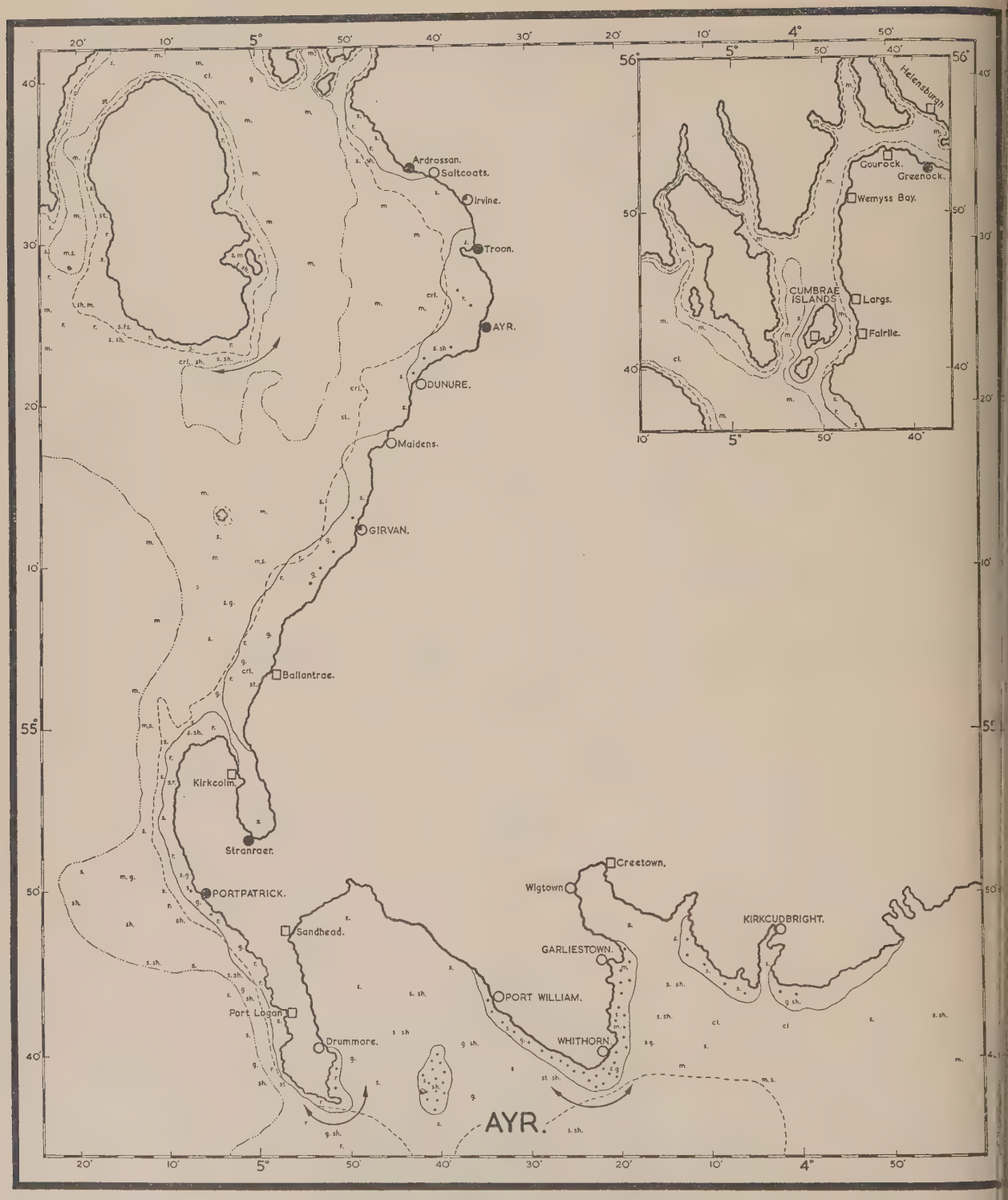

Fig. 32 Parts of the Ayr Fishery District, showing the creeks, harbours, anchorages, etc., together with the fishing grounds and the 1954 landings of lobsters and crabs, respectively. Key as for Figure 6.

Crews from Luing mainly market to merchants at Oban. Lobsters from elsewhere are generally igned to southern markets by the individual fishermen. The average individual weight of lobster lled is about 24 oz.

Fig. 31 shows the post-war landings of lobsters in the Tarbert District together with the pre-war e as a reference. Landings in the immediate post-war were roughly at their pre-war level. After a ng off in 1951 and 1952 they have currently returned to about the same figure. The overall data k divergent trends. In 1938 at Luing about 11,000 lobsters were landed and a similar number in) when 11 boats were engaged, some on a full time basis. Since then fishing has decreased progressively landings in 1954 were only around 1,400. At Tarbert, on the other hand, a significant fishery has loped in the post-war period and two crews are currently engaged seasonally in creel fishing on a le time basis. Landings at Lamlash, mainly by stranger vessels, although varying from year to year, been roughly maintained.

Ayr District

The Scottish coast from the Clyde to the border comprises the Ayr Fishery District. As at present ituted, it takes in the former Districts of Greenock and Ballantrae. The effective sea coastline, that cluding the estuaries of the Clyde and Solway, is about 200 miles. It is well furnished with good ours (Appendix, Table I), and creel fishing is confined to such creeks. The fishery is directed solely e capture of lobsters, and in most cases any crabs caught are discarded. In 1949 6,000 crabs were ed and a few are still marketed chiefly at Isle of Whithorn. The District fleet at present comprises t 23 boats, mainly of 20-25 ft. overall length. Less than half of these have inboard motors (Appendix, le II). In the main, lobster fishing is now concentrated on the central part of the southern coast of District. Some creel fishing is carried on throughout the year, but effort is more especially concentrated e summer months, when about 15 boats fish regularly. Except for 3 boats from Port William, creel g is on a part-time basis, usually as an alternative to other fishing.

crew of two is general; a few boats, however, are operated single-handed. An average of about 20 are worked per man. Crews fish lines as an alternative and frequently along with creels. Similarly,

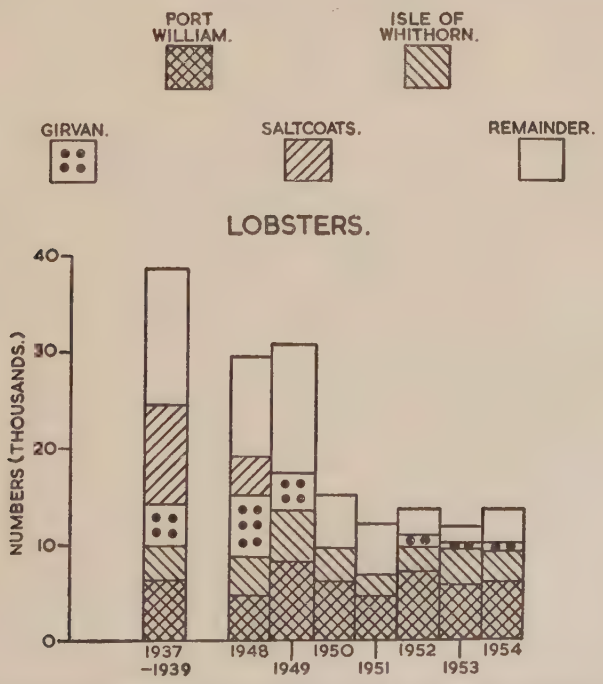

Fig. 33 The annual landings of lobsters in the Ayr Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly average is also shown.

escallop fishing is prosecuted. Creels are shot singly, in depths of up to 9 fathoms, and are hand-haule generally once, but occasionally twice, daily. A strong tide runs off the coast, and this, together with th fact that the majority of harbours are only open for part of the tide (Appendix, Table I), regulates th times of fishing. Grounds are shifted to some extent on most days.

At Port William and Isle of Whithorn, which account for the majority of lobsters landed in th District, creels used are of the parlour type (Plate 2) described on p. 6. Elsewhere, the normal Scotti type braided creel is in use, the single open-eyed variety being adopted. The base dimensions of th creel are about 26″ by 17″ and the height 14″ whilst the internal diameter of the eye is about 5″. Individu creel sinkers are heavy, to hold the creel in the strong tides. Unsalted bait is generally preferred and usually obtained by line fishing. Crabs are considered a good bait, also saithe, lythe and cod. Whe fishermen are devoting their full activities to creels, salted bait is commonly adopted.

Crews generally fish grounds adjacent to their creeks, although two boats from Saltcoats wo seasonally off Arran and now land there. The grounds exploited are shown in Fig. 32. They represe an area of about 60 square miles. The catch is stored in floating boxes pending despatch. Fisherm consign individually to southern markets, commonly Leeds and Billingsgate. Lobsters are genera packed in sawdust and are not iced.

Landings are heaviest in July and August when the greatest effort is applied (Appendix, Table II Most crews confine their lobster fishing activities to the period May to mid-October, depending on t weather, which factor also regulates the length of the season. Fishermen expect to average almost o lobster per creel at each haul at the best of the summer fishing. The individual lobster weighs on t average about 20 oz.

Although down on the pre-war level, landings in 1948 and 1949 at around 30,000 were at th post-war peak (Fig. 33). The fall, as against pre-war, is largely attributable to the change in practice the Saltcoats boats which fish around Arran. In the post-war they have landed at Lamlash, where previously they returned with their catch to the District. In 1950 landings fell to less than half that the previous year and since then have only been maintained at this level. Fishing has effectively cea on the western coasts of the District where in the immediate post-war the creeks of Girvan, A Ballantrae and Kirkcolm all recorded good landings. In the south of the District, on the other ha landings of lobsters at Port William and Isle of Whithorn have been well maintained throughout post-war period (Fig. 33).

(*r*) The Outer Hebrides

The islands of the Outer Hebrides comprise the Fishery Districts of Stornoway and Barra (Fig. 1 Together these account for about 15% of the total landings of lobsters in Scotland. Whilst there few harbours, the irregular coastline affords numerous safe anchorages (Appendix, Table I). The c is effectively about 310 miles in length. Of this, the Barra District accounts for a little over half. C fishing is directed solely at the capture of lobsters, such crabs as are taken being discarded. The wh of the Outer Hebrides is typically crofting, and the lobsters landed in the Districts are almost enti attributable to crofter fishermen, of whom over 300 work creels.

Of the 111 vessels which currently constitute the fleet, about 100 are less than 30 ft. and over are under 20 ft. overall length. A large proportion of the latter are without inboard motor (Appen Table III). Fishing is fitted in with other occupations and with weather. Consequently it tends t irregular. Transit losses are often excessive in summer, and although this is the period when clim conditions are most favourable for fishing a voluntary close season is observed in some areas, for exam Bernera, Lewis. In certain other areas this is the main fishing season. A broad distinction arises in respect between the Districts of Stornoway and Barra (Appendix, Table III). In the former, landi fall off during June and July and are at their peak in September and October. In the Barra District the other hand, they are at their peak in August. The heavy landings in these summer months ar large measure a consequence of the buying operations of merchants at Oban. Lobsters can be despatc from the Barra District to Oban in the summer without sustaining heavy losses, such as are experie

[1] Since 1956 the two Districts have been combined and now together constitute the Stornoway Fishery District.

Fig. 34 The Fishery District of Stornoway, showing the creeks, harbours, anchorages, etc., together with the fishing grounds and the 1954 landings of lobsters. Key as for Figure 6.

Fig. 35 The Fishery District of Barra, showing the creeks, harbours, anchorages etc., together with the fishing grounds and the 1954 landings of lobsters. Key as for Figure 6.

transit to southern markets. The outlet at Oban is not convenient for fishermen of the Stornoway district. In general landings vary seasonally, principally according to fishing effort which is in turn artly dictated by weather conditions (see also p. 74).

Other types of fishing are undertaken as opportunity arises, in particular, working nets for herring, hen shoals appear in the lochs, or mackerel fishing. The small boats are readily manoeuvred close shore, and as creels are hand-hauled, most of the fishing is carried out at depths of under 6 fathoms. he craft are variously worked either single-handed, although this is exceptional, or with two or three shermen. Often three fishermen will make use of a boat although seldom going to sea together. The mber of crew often varies from trip to trip.

Creels are fished singly, the number worked varying considerably from one individual to the next. sing a small hand-pulled boat, as few as 8 creels may be worked by each fisherman on an occasional sis. From 12 to 18 creels would be an average for the fishery using this class of boat. Crews operating ore regularly from motored boats adopt more creels, although seldom in excess of 30 per man.

The above methods are those in general use. There are, however, a few larger boats working from rnera (Lewis), Scalpay and Berneray (North Uist), the crews of which operate a more intensive fishery, ten using fleets of about 15 to 20 creels and working deeper water with up to 80 creels per man. In me cases cruises are of two or three days' duration, the catch being stored in network bags containing to 50 lobsters. This type of fishing is, however, exceptional.

Crofter fishermen work grounds adjacent to their townships. Creels are lifted once daily in the winter t generally twice daily on the longer summer days. Both single and double-eyed, braided creels are in e, often together. The size also varies, even within the gear of the individual fisherman. In general e measurements lie between 22″ by 15″ and 35″ by 17″ for the base, with respective heights of 12″ and ″. The average size of the creel eye is about 5″ internal diameter, and it is usually open. On account its availability, salted mackerel is the bait most commonly employed, the fish being caught and salted the crofters themselves. In some cases, however, supplementary bait is purchased.

Practically the whole coastline supports a lobster population. On the east side, however, the exposed ast shelves steeply and the available grounds are in consequence very narrow. Also, in the deeper ter a little offshore the rocky bottom is bare of tangle and so is less suitable for lobsters. On the east, erefore, fishing is restricted to the narrow coastal fringe and to the numerous sea lochs (Figs. 34, 35). f the west side, the bottom shelves gradually and the available area of good lobster grounds is nsiderable. On the other hand, in the Barra District this seaboard is very regular and affords little shelter th very few safe anchorages. In consequence, the fishing on these grounds is very limited. The west ast of the Stornoway District is not so regular and can therefore be more exploited. It does, in fact, pport a reasonable fishery. However, the area is exposed to the open Atlantic and in consequence the shore grounds cannot be extensively worked by the small vessels constituting the majority of the fleet. ound all the islands, the grounds adjacent to townships are those generally exploited, especially those thin the shelter of lochs. In these localities the extent of the fishery may be heavy in relation to the ailable population although farther afield, or on nearby exposed grounds, stocks may be almost touched (Thomas, 1955). In some places in the Barra Fishery District, which have access to both west d east coasts, the former are worked in summer, the latter being reserved for the winter fishery. The al area of exploited grounds around the Outer Hebrides is about 300 square miles (Figs. 34, 35).

Lobsters are stored in floating boxes pending despatch. They are usually consigned without packing terials, but in some instances heather, straw or bracken is used. Transit boxes are not readily obtainable d, as occurred extensively in the early post-war years, fishermen often have to resort to an assortment surplus cases, many of which are not ideal for carrying lobsters. In such circumstances transit rtalities are often accentuated. Consignments from the Stornoway District are usually made to lingsgate or, more recently, to the market which has become available at Kyle of Lochalsh. In the case the Barra District the alternative to southern mainland markets is at Oban. A small proportion o e lobsters caught in the Stornoway District are sold at Oban, and similarly, some of those from the rra District are taken by the merchants at Kyle. In addition, a buying organisation has operated thin the Hebrides during certain post-war years. Agents have accepted lobsters at Loch Boisdale and chmaddy in the Barra District, and at Rodel, Stockinish and Bernera in the Stornoway District. At

the latter two places, in addition to direct marketing by the organisation, lobsters were purchased in the summer for long-term storage in ponds, being refished and marketed in the winter (see also p. 75). Notwithstanding, a considerable proportion of lobsters landed are consigned by boat and rail to southern markets by the fishermen individually. During 1947 to 1950 an air transport service was available to the fishermen for conveying lobsters from Benbecula to London. It did not, however, prove attractive and was discontinued.

The catch per unit fishing effort and the average weight of lobster taken varies considerably according to the area of capture. For instance, around the Flannan Islands, which are very seldom fished, the average individual weight is about 32 oz., whilst within the sheltered lochs, where fishing is relatively intense, it may fall to about 20 oz. The overall average for the fishery as prosecuted is about 23 oz.

Fig. 36 shows the post-war landings of lobsters in the Stornoway and Barra Fishery Districts respectively, together with the figure for the immediate pre-war years. In both Districts landings were at their highest in 1949, being then considerably above the immediate pre-war level. In the Stornoway District landings fell to little more than half during the year 1950, and since then have been scarcely maintained. The 1954 landings at around 54,000 are well down on the pre-war level. The drop in 1954 was in part attributable to unfavourable weather in the late spring and early summer, which delayed operations at the majority of creeks, and the drastic curtailment of ponding operations. The decrease in landings in the post-war period is in part offset by the activities at Bernera, where a number of large boats are now operating, and where, in consequence, landings during 1954 were the highest recorded. Elsewhere, a persistent, falling trend obtained. Similarly, in the case of the Barra District, landings have fallen progressively since 1949 at all creeks, and at present are below the average of the immediate pre-war period. The diminution in landings of lobsters, which is attributable to a lessened fishing effort is in part due to the relative attractiveness of other work, in particular road development and hydro-electric schemes.

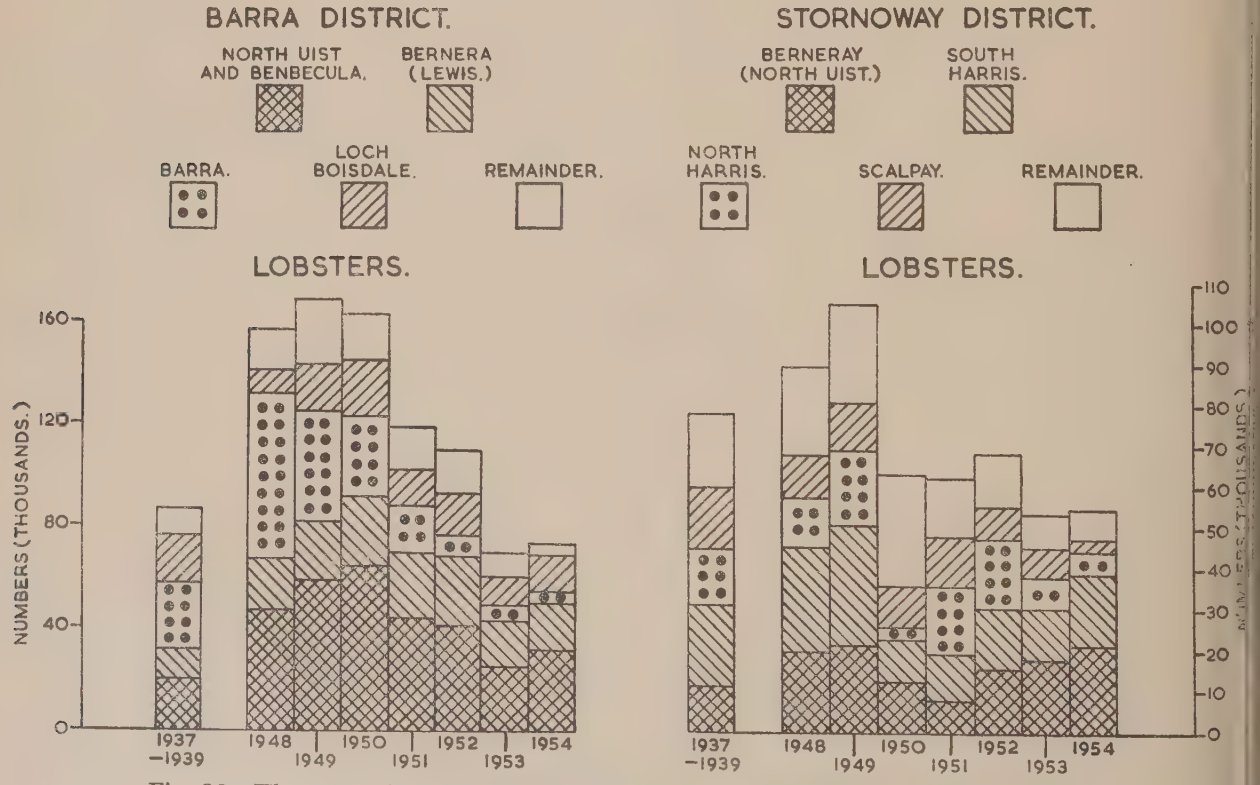

Fig. 36 The annual landings of lobsters in the Stornoway and Barry Fishery Districts, respectively, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly averages 1937-1939 are also shown.

Orkney District

The Orkney Fishery District has an effective direct coastline of roughly 350 miles (Fig. 1). It nstitutes one of the crofting counties. Creel fishing is very generally practised, and in 1954 the District ounted for over 15% of the total landings of lobsters in Scotland. There are a number of harbours and merous safe anchorages (Appendix, Table I). Creel fishing is directed solely at the capture of lobsters, ich are mainly landed by crofters, although there is a whole time fishery at Stromness and Kirkwall. these places a number of crews other than crofters also work on a part-time basis.

The fleet consists currently of about 157 vessels, of which only about one-fifth are more than 20 ft. rall length. These craft are mostly under 25 ft. and are fitted with inboard motors (Appendix, Table II). the remaining vessels, only about half are motored. Some crews work two boats which may be on ferent coasts. A small boat is in many cases employed in conjunction with a larger vessel, the former ng worked with creels shot in the very shallow water. The fishing is mainly concentrated close inshore depths of under 10 fathoms. During the summer months most crews fish in under 5 fathoms and often y just outside the low water level. In those waters individual creels are shot in carefully chosen itions. Fishing is largely concentrated in the summer months, particularly May to October (Appendix, ble III). Other types of fishing are seldom prosecuted, though some crews fish for mackerel, and whole le fishermen at Stromness and Kirkwall in some cases work hand lines.

Fishermen usually work two per boat, although small craft are commonly also operated single-handed. eels are shot singly, and regular fishermen work about 30 per man. This level is typical, but whole le fishermen may use up to 50 creels per man, whilst casual fishermen, working irregularly, may have y about 10 to 15. Creels are lifted once daily except during the summer when, providing results are od, it is usual for crofter fishermen to lift twice per day. They are usually shot grouped into batches about 10 creels and are shifted regularly according to results.

Both single- and double-eyed, braided creels are employed but the former are more common, resenting about two-thirds of the total. The base measurements average 21″ by 18″ and the height out 13″. The eyes are round and fitted with a ∩-shaped non-escape shutter. The ring at the inner end he eye is made of galvanised iron wire and the creel hoops are constructed of quarter-inch iron rod. eels are weighted with heavy sinkers. On account of availability, salted bait is almost universally opted, except by some of the whole time fishermen from Stromness who, during the summer, catch ir own bait and prefer to use it fresh. Mackerel is preferred, but herring also is used. Bait is largely chased but some fishermen also catch and salt a proportion.

The Orkney Islands as a group encircle a sea area, thereby affording ample shelter (Fig. 37). In a nber of places it is also possible to fish on alternate coasts. For instance, some fishermen on Westray k on the west during the better months, and on the east at other times. Similarly the north and t coasts of North Ronaldsay are visited in the summer up to August thereafter fishing continues on south and east coasts until October. Boats from Stromness work the exposed western coast of Hoy the mainland during the summer, diverting their activities to the sheltered waters within Hoy nd and Scapa Flow during the winter. Whole time fishermen from Kirkwall and Stromness range to 10 or more miles from their base. Crofter fishermen, on the other hand, usually work grounds acent to their moorings. In consequence, certain areas, particularly sheltered places within easy ance, are considerably exploited, whilst other parts of the coast, on account of their exposure or tive inaccessibility are largely unfished (Thomas, 1954). The greater part of the Orkney coastline ports a lobster population. The regions fished are shown in Fig. 37. The shallow coastal fringe is, in main, relatively wide and in consequence the area of lobster grounds is considerable. The greater t is exploited to some extent, constituting about 130 square miles.

The catch is stored in floating boxes pending despatch. Fishermen in the more remote islands consign e per week. Practically the whole of the lobster landings in Orkney are sold to merchants at Kirkwall. se also have local agents in the larger north islands (Westray, Sanday, etc.). In 1954 a marketing anisation commenced operations in Stromness, but they handled only a small proportion of the total rict lobster landings. By using the Orkney merchants, local transit losses sustained by the fishermen insignificant.

Fig. 37 The Fishery District of Orkney, showing the creeks, harbours, anchorages, etc., together with the fishing grounds and the 1954 landings of lobsters. Key as for Figure 6.

TABLE XIX

The landings of lobsters, by months, expressed as a percentage of total landings, in the Orkney Fishery District over the period 1950-1953, inclusive, and the average catch of lobsters per 100 creel hauls at Rousay

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Overall weighted average
lings, Percentage of total . .	1·3	0·8	1·3	2·2	13·4	15·1	12·0	16·6	17·0	12·2	5·2	2·7	—
ters, Catch/100 creel hauls .	38·6	41·2	37·0	37·3	31·6	36·8	38·7	64·2	73·1	64·4	51·8	43·9	49·9

Lobsters are landed in greatest number during the summer and autumn, the peak landings occurring ng August and September. There is some falling off during July, at which season lobsters are scarce to casting and when the amount of fishing is decreased by diversion of crofters' efforts to farming vities. At about 73 lobsters per 100 creel hauls, the catch in relation to effort is at its best in August September (Table XIX). It is, however, at a high and uniform level throughout the year. The ptional yield during August to November is in part accounted for by the special effort which is cted at siting creels in the very shallow water during these months. Seasonal changes in landings are rge measure attributable to variations in the amount of fishing. In addition, however, boats are able sh more prolific grounds on the exposed coasts and farther from their base during the summer. e coasts, for example, North Ronaldsay, are fished only in summer. At other places, where there are tal, sheltered areas, for example Kirkwall, Stromness, Shapinsay, Rousay and Walls, Flotta and the side of Hoy inside Scapa Flow, creels are worked, to some extent, at all seasons. The average vidual weight for lobsters landed, taking the fishery as a whole, is about 27 oz. The average size of er varies in different areas, and where boats fish alternative grounds in summer and winter, this mes reflected in seasonal variation in the average individual weight of lobster landed. Thus, at nness, the average weight in June is over 25 oz. whilst it falls to under 19 oz. in February when s are fishing the sheltered and more heavily exploited grounds (Table XX).

TABLE XX

The average individual weight of lobsters landed at Stromness, by months, over the period June 1951 to December 1952

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Overall weighted mean
er in Sample . . .	227	96	169	246	1112	1487	1182	2626	4063	2303	1958	619	8762
ge Weight (oz.) . .	20·8	18·5	24·5	22·6	24·5	25·3	25·2	22·3	22·1	22·3	21·2	20·9	22·2

ig. 38 shows the post-war landings of lobsters in the Orkney Fishery District together with comparable for the immediate pre-war period. Over three times as many lobsters were landed in 1948 as in 1938, ubsequently this high level was not maintained and the number had fallen to less than half by 1951. ower level, however, has been roughly constant over the past four years and still exceeds the level dings for any sustained period prior to 1938. The trend in landings for the District as a whole is in al typical of the majority of creeks. At Stromness, however, the decrease from the 1949 peak of 26,000 lobsters is much less pronounced, the current landings being around 16,000. On the other the post-war decrease has been most pronounced at Hoy and Graemsay where less than 7,000 rs were landed in 1954 as compared with over 51,000 in 1948 and 11,000 in the immediate pre-war.

At Stronsay, 37,000 lobsters were landed in 1948 whilst in 1954 the number had fallen to a little ov 5,000. This is largely attributable to depopulation of the island and a consequent decrease in fishi effort. The amount of effort is, in fact, mainly responsible for the variations in landings. The islande have a variety of opportunity and tend to divert effort into pursuits which are at any particular time t most attractive.

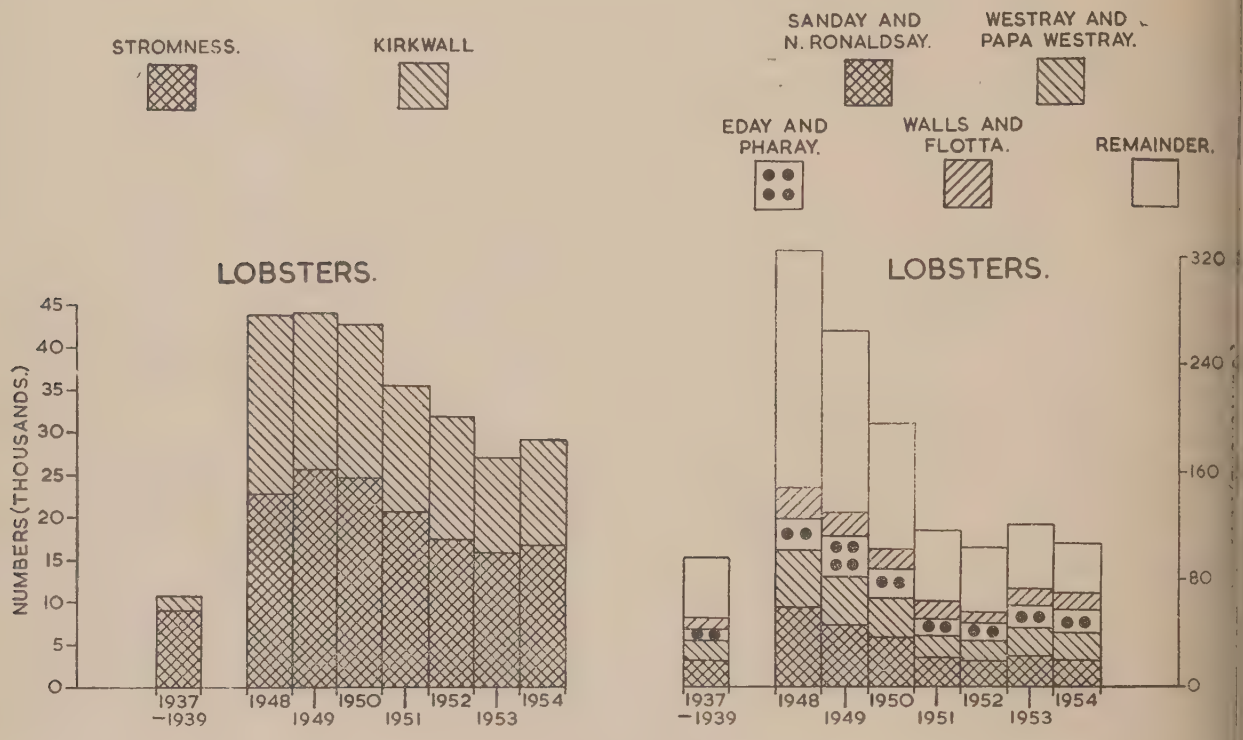

Fig. 38 The annual landings of lobsters in Stromness, Kirkwall and the remainder of the Orkney Fishery District, respectively, together with the component landings at certain other creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly averages are also shown.

(*t*) Shetland District

The Shetland Fishery District has an effective coastline of about 200 miles, with few harbours b numerous safe anchorages (Appendix, Table I). Although the islands are included in the crofting counti creel fishing is not generally pursued by the crofters. The bulk of landings are attributable to whole ti fishermen who mainly depend on creels but who also work lines, or, alternatively, work creels at interv between other types of fishing—for instance, herring or whaling expeditions. The lobster fishery is n extensive, the fleet comprising about 19 vessels (Appendix, Table II). Regular fishing is largely confi to the creeks of Scalloway and the Isles and Walls, which together account for almost 80% of the to landings in the District. Fishing and landings are heaviest in summer and autumn, but some boats ca on throughout the year (Appendix, Table III). Lobsters only are landed, being consigned by individual fishermen mainly to Billingsgate or to merchants at Kirkwall, Orkney. The average individ weight of lobster landed is around 39 oz.

Over the whole District the coast shelves very steeply (Fig. 39). In consequence, the ground availa for lobster fishing is limited, being only about 52 square miles. Creel fishing vessels range over the groun and move continually. In places the rocky bottom is smooth and not wholly suitable for lobsters. Al much of the coastline is very exposed. In consequence, creel fishing in the District is limited. It is larg a post-war development (Fig. 40). In 1938 landings were only about 2,800, attributable to Scalloway a the Isles. Since 1948, on the other hand, some landings have been made at all creeks. The heaviest,

Fig. 39 The Fishery District of Shetland, showing the creeks, harbours, anchorages, etc., together with the fishing grounds and the 1954 landings of lobsters. Key as for Figure 6.

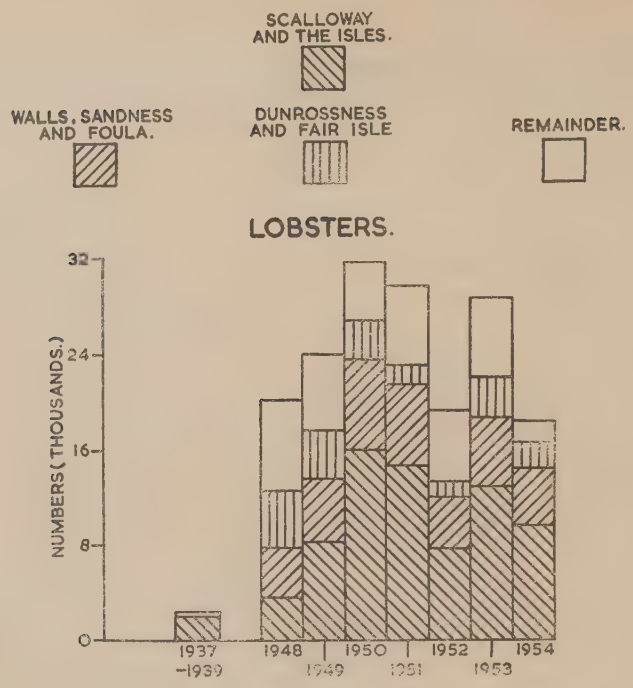

Fig. 40 The annual landings of lobsters in the Shetland Fishery District, together with the component landings at certain creeks for the years 1948-1954, inclusive. The corresponding pre-war yearly average is also shown.

about 31,600, were made in 1950, since which year they have fallen to about 17,800 in 1954. The amou of fishing tends to vary from year to year, depending in large measure on the results obtained from oth fishing—for instance, lining.

(*u*) A Comparison by Coasts

The area of grounds supporting lobsters is less on the east coast than elsewhere around Scotla This is due to the relatively unbroken character of the coast with its few islands (Fig. 1) and considera stretches of unsuitable bottom. On the other hand, it shelves gradually and is relatively less exposed. is also well provided with harbours and communications (Appendix, Table 1). In consequence of th latter factors, landings of lobsters on the east coast of Scotland exceed not only the landings in Orkn and Shetland but also those of the west coast including the Outer Hebrides. Furthermore, crabs are land in addition to lobsters, and by value represent more than lobsters (Table II, p. 10). Crabs are not genera landed elsewhere in Scotland, partly on account of the mortalities sustained during the long journ to market and also because, except on the east coast, the lack of harbours and the part-time charac of the creel fishery precludes the use of the larger craft which are best suited to crab fishing. In ve recent years crab fishing has developed on the west coast of Scotland. It has been associated with full-ti fishermen working from well appointed harbours situated at the railheads of Kyle of Lochalsh a Mallaig.

The composition of the fleet reflects the above differences. Thus, on the east coast practically all craft in use are fitted with inboard motors, whilst on the west coast and in Orkney and Shetland a thi or more, in the latter case, are hand-pulled or with outboard motor. Furthermore, the average size boat is larger on the east (Appendix, Table II). Mechanical creel haulers are almost wholly confined the latter coast. Associated with the difference in boats is the range of grounds covered. Crews of t west coast and Orkney tend to confine their activities to grounds nearer their base than is the case on t east coast. In consequence of this, and because of weather risks, considerable areas of the west coast a very lightly fished. This factor has given rise in the recent post-war years to a whole time fishery

boats which are based on the railhead ports of the west coast. The vessels are used for cruises of a 's duration, and in this way are able to fish relatively unexploited grounds. Differences in the level ploitation give rise to marked variations in the average individual weight of lobsters landed, which ne east is only a little over 19 oz. whilst on the west it is over 26 oz. For Orkney and Shetland the age figure is about 25 oz., whilst the overall figure for Scotland is around 23 oz. The catch per 100 hauls also reflects the different levels of exploitation although in this respect landings of crabs ne east coast offset the low average catch of lobsters, and crab and mixed fishing result in figures being strictly comparable. An average of about 24 lobsters per 100 creel hauls obtains on the east , whilst the comparable figure is about 50 lobsters per 100 creel hauls elsewhere. The average for and as a whole is around 40. The greater density of lobsters often makes lifting of creels twice a day h while during the summer on the west coast and around Orkney, but not so on the east.

'or a given size of boat the number of a crew on the east coast averages less than elsewhere, and creels are worked per man (Table III, p. 13). The practice on the west coast and Orkney is to work ower water and consequently creels are sited with more care and are shot singly as opposed to ctively, in fleets. This latter practice is frequently adopted by whole time fishermen on the east where about 43% of creel fishermen work on a whole time basis. On the west the comparable e is about 13%, whilst in Orkney and Shetland it is only around 8%.

'he east of Scotland has a considerable white fish industry, and small catches are therefore easily eted so that creel fishermen often work hand lines as an alternative to creels, or to supplement their fishing. This does not usually apply elsewhere so that such alternative fishing is for local consumption and is therefore not extensively prosecuted. Creel bait is governed by availability. On the east there nost always ample fresh bait, which is preferred. For the most part, in other regions salted bait, ally mackerel or occasionally herring, has to be adopted and sometimes has to be purchased.

'he whole of the east coast of Scotland is within easy access of a railhead and most creeks are served railway. It is therefore possible to consign at any time. On the west, despatches can be made perhaps , or in many places, only once, per week. The period taken to reach market is considerably less on ast coast than elsewhere in Scotland, where railheads are few and the townships generally inaccessible. rcumstances such as the latter, transit losses become a problem, particularly as, with a few exceptions, or packing is not available. In the most remote creeks transit losses in summer become excessive in on to the low price of lobsters then obtaining. In consequence, fishing is frequently suspended, though weather conditions, which will prevent fishing in winter, are ideal. This handicap, which only minor consequence on the east coast, has led to the development of long-term lobster storage e west, particularly in the Outer Hebrides (see also p. 75).

uring the early part of the present century, until 1914, the west coast of Scotland accounted for ximately 70% of the total landings of lobsters, and those of the east coast roughly equalled those of ey and Shetland at about 15%. The east did not, however, suffer the same setback in lobster g which characterised other areas during the first World War. On the other hand, it did cipate strongly in the post-war recovery. Whilst landings on all coasts were at higher levels than e, in the period between wars landings attributable to the east coast had risen to about 26% of otal for Scotland, the increased proportion being mainly at the expense of the west coast (Fig. 4,). A similar variation in landings occurred in the 1939 war. Fishermen of all areas were drawn into rvices but larger fishing vessels were requisitioned at a faster rate than manpower. These vessels ged mainly to the east coast and there was, therefore, a tendency here for fishermen whose boats been taken over to turn to creel fishing from smaller craft. This made good the losses of established fishermen, and in consequence, landings of lobsters on the east coast were maintained. Elsewhere, e other hand, due to the fact that there was no influx of fishermen from the larger boats, departure el fishermen resulted in a decreased effort and lower landings. After the second World War the coast again participated strongly in the recovery and as a result landings of lobsters rose to a level ly the same as that of the west coast, representing about 38% of the total by number. The effect ot apply in the case of the east coast crab fishery (Fig. 5, p. 16) because displaced fishermen who took bster fishing from small craft were not able to take up the larger scale crab fishing.

nce 1948 there has been some falling off of landings of lobsters on all coasts, but this has affected

the east coast to a somewhat less extent than elsewhere, whilst landings of crabs in 1953 were the highe recorded.

STORAGE AND MARKETING

The main markets for lobsters and crabs are at Billingsgate and a number of English Midland towr The majority of lobsters landed in Scotland are consigned by individual fishermen for sale in these marke The system allows for the despatch of relatively small numbers such as can be accumulated readily i one fisherman who, being responsible for his own goods right up to the time of sale, accepts the prevaili transit and market conditions. In this procedure the individual fisherman despatches a few boxes maybe only one—each containing two or three dozen lobsters, as is convenient. It may be necessary store the catch for some days pending despatch, in order to await transport or to build up the necessa numbers. This is done in small boxes as described in "Practical hints for lobster fishermen" (1952). Th are usually floated at some convenient sheltered position a little offshore. However, where there is a ri of fresh water overlying the salt water they are sunk.

Crews, when engaging in expeditions of a week's duration, employ large storage boxes capable holding about a thousand lobsters for a short time. The accumulating catch is stored in these.

Fishermen marketing their own catch are sometimes subject to heavy transit losses, especially duri warm weather and where the time taken to reach market is protracted. Losses are accentuated wh packing facilities are limited—for instance, by lack of suitable containers and by non-availability of ic In some of the more remote areas of the north and west of Scotland transit losses are such that fishing summer is not worthwhile. Lack of marketing facilities often imposes a seasonal variation in the exte of lobster fishing. This is apparent in comparing the isolated Loch Broom Fishery District with t adjacent, though less inaccessible, Kyle Fishery District (Appendix, Table III).

Merchants, buying lobsters from local fishermen, operate at Eyemouth, Johnshaven, Kirkw (Orkney), Kyle and Oban. In addition, a buying organisation has established depots at Bernera (Lew Rodel, Lochboisdale and Lochmaddy in the Outer Isles. Similarly, merchants at Kirkwall have buy agents in a number of the islands of the Orkney group. Such outlets remove most of the hazards of trar from the fishermen, and in some cases boxes for carriage are also supplied. In remote areas merch buyers often facilitate a summer fishery which might not otherwise be worthwhile. This is largely true Orkney, where local merchants take practically all the lobsters landed. Fishermen, consigning their o catches find that, allowing for their transit losses, etc., returns in general compare unfavourably w those obtainable from the merchants. Businesses marketing lobsters are equipped with large-sc storage facilities. These frequently include a number of large twin compartment storage boxes, as describ in "Practical hints for lobster fishermen" (Scottish Home Department, 1952), or, working on the sa principle, ships' hulls bored with holes. At Eyemouth, Johnshaven (Montrose Fishery District) and Oban, shore based concrete storage installations with pumped sea water and aeration are used. Mercha are able by either method to accumulate lobsters and build up optimum loads. They have also go packing facilities using wood wool or shavings and, when necessary, ice. Such operators can safely consig with as little as 5% mortality, when the individual fishermen would almost certainly sustain excess losses. In general, merchants store lobsters only for a week or so, as may be necessary, and comm only for a few days. On the other hand, their methods make it possible to accumulate lobsters ove period, and in this way numbers have been built up at Eyemouth for shipment to France by rail boat via Newlyn (Cornwall). Similarly, consignments have been made by air from Kirkwall to Belgi Lobsters are also exported to Holland and Norway. A certain minimum load is necessary to t advantage of these markets, as also to consign in iced railway vans or by other special means. They in consequence, not available to individual fishermen.

Most lobsters marketed within Britain are consigned by rail or by boat and rail. Air transport, however, been used from the Outer Isles. Experiments were started in 1947, and in subsequent years to 1950, inclusive, a firm purchased lobsters from Benbecula, South Uist and Eriskay fishermen for transport from Benbecula airport to London. The service was extensively used during the sum months when transit losses by other means would have been excessive.

nstallations used primarily for short term storage are also suitable to a limited extent for keeping ers, at lower densities, over periods of several months. This is usually done in order to take advantage e disparity between summer and winter market prices (see also p. 77). Relatively simple structures, as those at Johnshaven and Eyemouth used mainly for short-term stocking, also serve for long-term ge. At one such depot the concrete tanks, of which there are two, are housed in a shed. Each tank ft. long by 12 ft. wide with a depth of 2½ ft. of water. The intake to an electrically operated pump uated in a pool a little above the level of low water neap tides. Whilst the tide covers this area, fresh ater is pumped continually through the tanks, from which it overflows back to the sea. During the ining hours, around low tide, the sea water contained in the system is maintained in circulation, drawn from one end of the tanks and cascaded into the other end. The cascading aerates the water. ong-term storage, lobsters are held at densities of up to about 10 lobsters per square foot. The rate ake of fresh sea water is about equivalent to a change of the tank water every hour. These installations been successfully operated commercially for short-term and long-term storage since 1949.

On the west coast of Scotland where transport difficulties are most acute, some fishermen store ner-caught lobsters, pending more favourable transit conditions, in small ponds. These latter are al arms of the sea which can be conveniently dammed off and which receive a regular flushing with sea water at each tide. Similar in principle, but on an extensive scale, are the lobster storage ponds rnera and Stockinish in the Outer Isles, and at Cullipool, Luing, by Oban. The Bernera pond is ructed from a natural inlet off the sea, to which it is connected by a narrow channel. Across this a dry stone wall is built, being about 50 yards in length and convexed to seaward in order better to tand rough seas. The pond itself is about 300 yards in length and varies in width from 50 yards at eck to about 100 yards, the average being about 70 yards. The pond is, in the main, steep-sided t at the landward end. The deepest part, at low water, is about 10 ft., and at high water neaps t 17 ft. Sea water readily streams through the dry stone wall and the water level inside the pond nly about twenty minutes on the sea level outside. A full flushing effect is obtained at every tide, olume of open sea water coming in being several times the volume of the water retained in the . The bottom consists of rock with sandy patches to seaward, though with some mud at the landward There is a copious growth of seaweed and the bottom provides a reasonably natural habitat.

obsters are received for ponding during the summer and early autumn when market prices are low ransit conditions from the Outer Isles are unfavourable. They are re-fished during the late autumn winter to take advantage of the better market price and improved transit conditions. The claws of rs are cut prior to ponding in order to curtail cannibalism. Lobsters are re-fished by means of l scoops (Thomas, 1953), or, as the numbers decrease, by means of creels of the usual west coast rn. This pond is considered suitable for the storage of at least 20,000 lobsters. At Cullipool, on the hand, where the pond can, if necessary, be completely drained, densities several times this level onsidered practicable.

osses of lobsters in the ponds run between 10 and 25% by weight. Where lobsters are stored for ds of longer than a month, they are usually fed about 2 lb. salted herring or mackerel daily per 100

TABLE XXI

Landings of lobsters during the summer months July, August, and September, at certain creeks in the Outer Hebrides expressed as a percentage of total landings for each of the years 1937-39 and 1948-54

	1937	1938	1939	1948	1949	1950	1951	1952	1953	1954
oisdale	67	71	66	28	33	56	56	67	71	55
. . . . .	47	51	37	51	54	51	62	55	32	58
y (Barra Fishery District)	7	16	—	15	33	16	9	27	15	22
Harris	4	3	13	28	68	29	34	22	13	56

lb. of stored lobster. There is, notwithstanding, a tendency to some individual loss of weight in the pon which is included in the above estimate.[1]

The effect of merchanting activities in stimulating the fishery, in particular during the summer, well exemplified in the Outer Isles. Merchant outlets have existed at Oban for many years. As a resu of this and the regular steamer connection with Loch Boisdale and Barra, an extensive summer lobst fishery has existed at these creeks (Table XXI). From Berneray (Barra Fishery District) and Sou Harris, on the other hand, connections with Oban and Kyle are considerably more difficult. In cons quence, fishing in July, August and September in the years prior to 1948 was negligible although extensive fishery obtained in other months. From 1948 onwards, a marketing organisation operate accepting about 51,000 lobsters in 1948 and about 74,000 in 1949 at Stockinish (Harris), which place accessible from Berneray and South Harris. The fishermen of these areas were thereby enabled to opera during the summer months when, during both these years, a considerable percentage of the yea landings were made. The fishing was to some extent additional to that at other seasons and the to annual landings during 1948 and 1949 were at a high level. In 1950 the number of lobsters accepted Stockinish fell to about 18,000, and the summer fishery suffered in consequence. Merchant activit remained at a reduced level in 1951 and 1952 and fell to their lowest figure in 1953 when landings Berneray and South Harris during the summer months were down to only about 15% and 13% of t year's totals, respectively, as compared with 33% and 68% in 1949, the year of highest activity by t marketing organisation. In 1954 a marketing receiving depot was established at Rodel (South Harri resulting in an immediate increase in the summer fishery at Berneray and South Harris (Table XX On the other hand, offerings of lobsters in increased numbers on heavily supplied mainland mark in summer reduce the price and thus may, at times, render summer fishing not worthwhile, as was fou by the ring-net boats from Kyle and Mallaig (see also p. 51). Similarly, by evening-out supplies, long-te storage of lobsters must, to some extent, destroy the margin between winter and summer prices fr which the expenses of storage must be met (see also p. 79).

It is usual to avoid storing crabs, as far as possible, but they may, where necessary, be kept in float boxes for a few days. Crabs are despatched to Billingsgate or other main markets from a number of coast fishing ports. They are consigned by individual fishermen, packed closely, commonly in bar containing about 5 stones and without special packing material. Transit deaths tend to be heavier th with lobsters and the market price per pound is considerably lower so that transit costs represent a hig fraction of the total price (see also p. 82). In consequence, the effect of deaths in transit is accentuat This reduces the numbers despatched to mainland markets in the summer, whilst despatches in autumn are curtailed by the high proportion of soft crabs due to the casting season (Meek, 1904). T season of heaviest despatches is May and June (Appendix, Table IV). This applied generally to t crab fishery on the Scottish east coast in the immediate post-war years. From 1948 onwards, with gap of twelve months in 1950-51, crabs landed in the Wick Fishery District were taken for processi by a firm at Thurso. In consequence, the seasonal pattern in this area was changed and landings beca heaviest in the summer since transport no longer constituted a problem. The seasonal pattern in t Wick Fishery District then differed from the remainder of the east coast crab fishery (Appendix, Table I In 1953 a firm commenced processing crabs at Berwick-on-Tweed. Between them these firms now t the majority of crabs landed in Scotland and the demand is such that a new fishery for crabs has develo on the west coast, where formerly, due to the problems of transport to mainland markets, no signific crab fishery was possible (see also p. 51). In 1955 further crab and lobster processing factories commen operations at Inverbervie (Montrose Fishery District) and Boddam near Peterhead.

COSTINGS AND PROFITABILITY

Unmutilated lobsters weighing between 1 and $1\frac{1}{2}$ lb. command the best market. Selected lobsters this class sell at a premium averaging about 9d per lb. on the best price for "all in" lots (Fig. 41). Th

[1] A pamphlet entitled "Lobster Storage" describing the various methods adopted for medium and long-term storage both in Bri and abroad was published by H.M.S.O. in 1958.

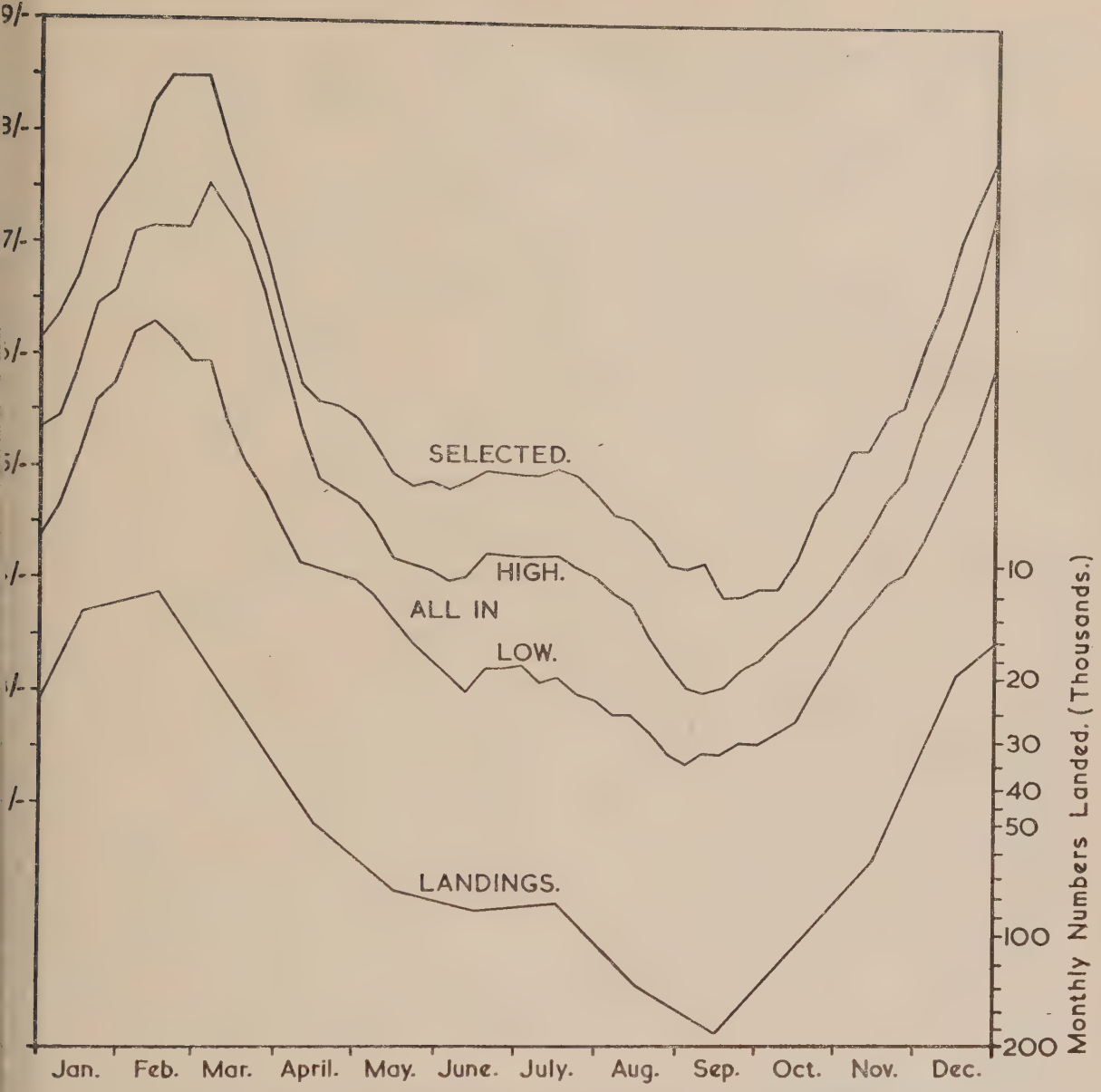

Fig. 41 The five-week moving average prices per lb. for selected lobsters and for the high and low prices of "All in" lots at Billingsgate during 1954. The total landings of lobsters in Scotland, by months for this period, is also shown.

currently have an average price range of nearly 1/-d. per lb. Both these differences are relatively ant throughout the year.

andings of lobsters are subject to wide seasonal variations (Appendix, Table III) and the market follows supply in an inverse manner very closely (Fig. 41). The variation in the weekly wholesale of lobsters at Billingsgate market in the years 1948-1954, inclusive, is shown in Fig. 42. Since 1948, eak price has been reached in February or March, while its minimum is sustained in the second f August or September. The price difference between the summer low and the succeeding winter in the years 1948-1953 varied between 3/- and 3/5d per lb. for the high "all in" price. Averaging eekly market prices over the years 1948-1954 (Fig. 42), the peak at 5/9d per lb. in the high "all

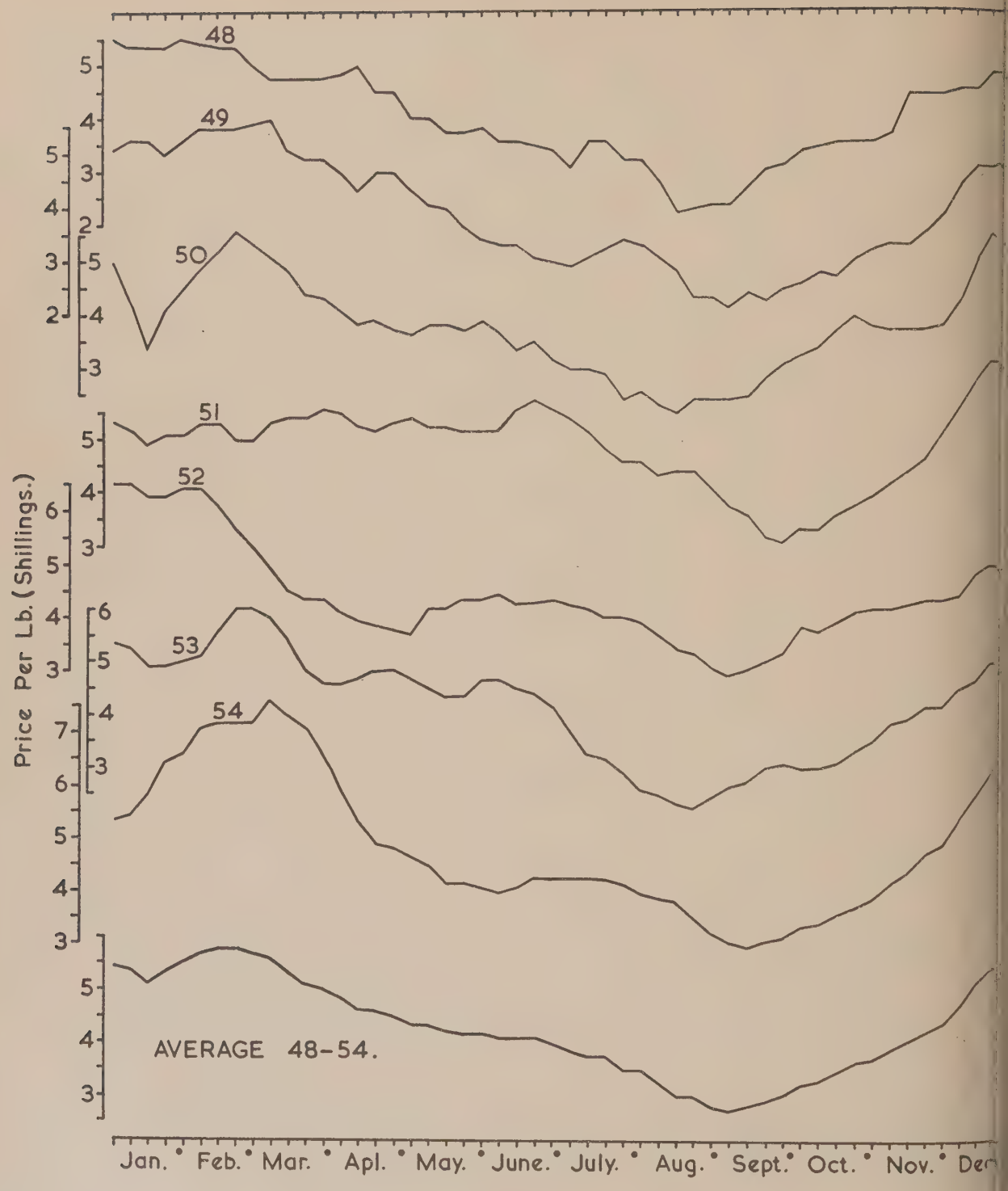

Fig. 42 The five-week moving averages of the high "all-in" price per lb. of lobsters at Billingsgate market for each of the years 1948-1954, inclusive, together with the mean of the averages for these seven years.

price attained at the end of February compares with the low of 2/9d per lb. around 1st September. 954 landings of lobsters in the early months of the year were at an exceptionally low level, and in equence, the price rose to 7/6d per lb. as compared with 2/3d in the previous August.

The relationship between Billingsgate market price and Scottish landings is shown in Fig. 43. tish lobsters represent about 61% of the total British landings. In any one month, differences in the from year to year are related in an inverse manner to the number of lobsters landed, in spite of rences of climate and public spending power. A similar relationship exists throughout the year. practice of storing summer-caught lobsters for marketing at the enhanced price obtainable during nsuing winter has already been referred to (p. 75). Such operations have been carried out at Bernera, kinish, Cullipool, Johnshaven and Eyemouth. The average 1948-1953 minimum of the "all in" sustained for four weeks, taking the top quotation, was 2/8d per lb. during the month of August. rther 50,000 lobsters withheld from the market in August would have resulted in an increase in the age market price to 2/11d per lb. (Fig. 43). Releasing these lobsters after storage on to the winter kets over a three-month period, mid-December to mid-March, when the sustained average price 5/3½d per lb., would have resulted in a decrease in this price to 4/9d per lb. Released over the two months, the effect would have been to reduce an average price of 5/4¾d per lb. to 4/7¾d per an inferior result, especially as the average period of storage is longer in the latter instance. In general, r existing conditions, a margin of about 2/6d per lb. in the high "all in" market price can be ipated in assessing long-term storage. This sum will be lessened by any increase in numbers stored winter sale in British markets. The margin is favourably adjusted by relative costs of transport and keting (see p. 82) and the more favourable transit conditions, but these are offset by the operating nses including mortalities during storage.

Crabs landed in Scotland are in general smaller than those from the south-west of Britain and are ed separately in the Fishing News report of Billingsgate Market prices. During 1954 small Scottish realised 10/6d to 12/6d per stone in March and 12/-d to 14/-d in August as compared with the ated average for the year of about 8/6d per stone. Landings of crabs are not so much subject to ar seasonal variation as those of lobsters and in consequence the seasonal market price pattern t constant. For instance, in 1948 a peak price occurred in the beginning of the year and again in mber/October. In 1949 a low point was reached in November whilst in 1950 the price in this same d was above that of the spring peak and about equal to the best for the year which was reached ecember. However, taking the period 1948-1954, inclusive, a seasonal pattern emerges (Fig. 44) nich an average price of about 9/-d to 11/2d per stone is recorded in March and a low point around l to 8/9d in May/June, the latter being followed by a steady increase through the remainder of the This pattern is closely paralleled in an inverse manner by the level of monthly landings. The margin een the highest and lowest selling prices on the market is relatively constant at about 2/6d per stone pective of the actual selling price.

The purchase of a boat is the main capital expense involved in creel fishing. A craft, suitable for full- fishing by one or two men, fitted up with an inboard engine can be obtained in good secondhand tion for around £250. A vessel suitable for two to three men fitted with a 22 h.p. Diesel engine cost around £1,000 new, when fully equipped complete with a creel hauler. Larger general se craft suitable for seine or drift-net fishing as well as creels and operated by a crew of five, costs rds of £5,000. Grants and loans can usually be obtained by prospective owners. Over the range of suitable for all the year round creel fishing, on a whole time basis, a reasonable average capital y is about £350 per man. Such a vessel could reasonably be expected to last more than thirty years ly treated, giving a capital depreciation on the boat of about £12 per annum per man. These s are based on 1954 prices.

Where boats have been bought without recourse to loans it is not usual for creel fishermen to insure craft. However, in the case of bigger vessels and where loans have been taken up the annual ance premium would work out at approximately £17 10/0d per annum per man. A further sum of 10/0d per annum per man should be allowed in respect of interest on capital. Maintenance costs boat and the engine, excluding crew's time may average roughly £35 per annum per man in the of a vessel used whole time on creel fishing throughout the year.

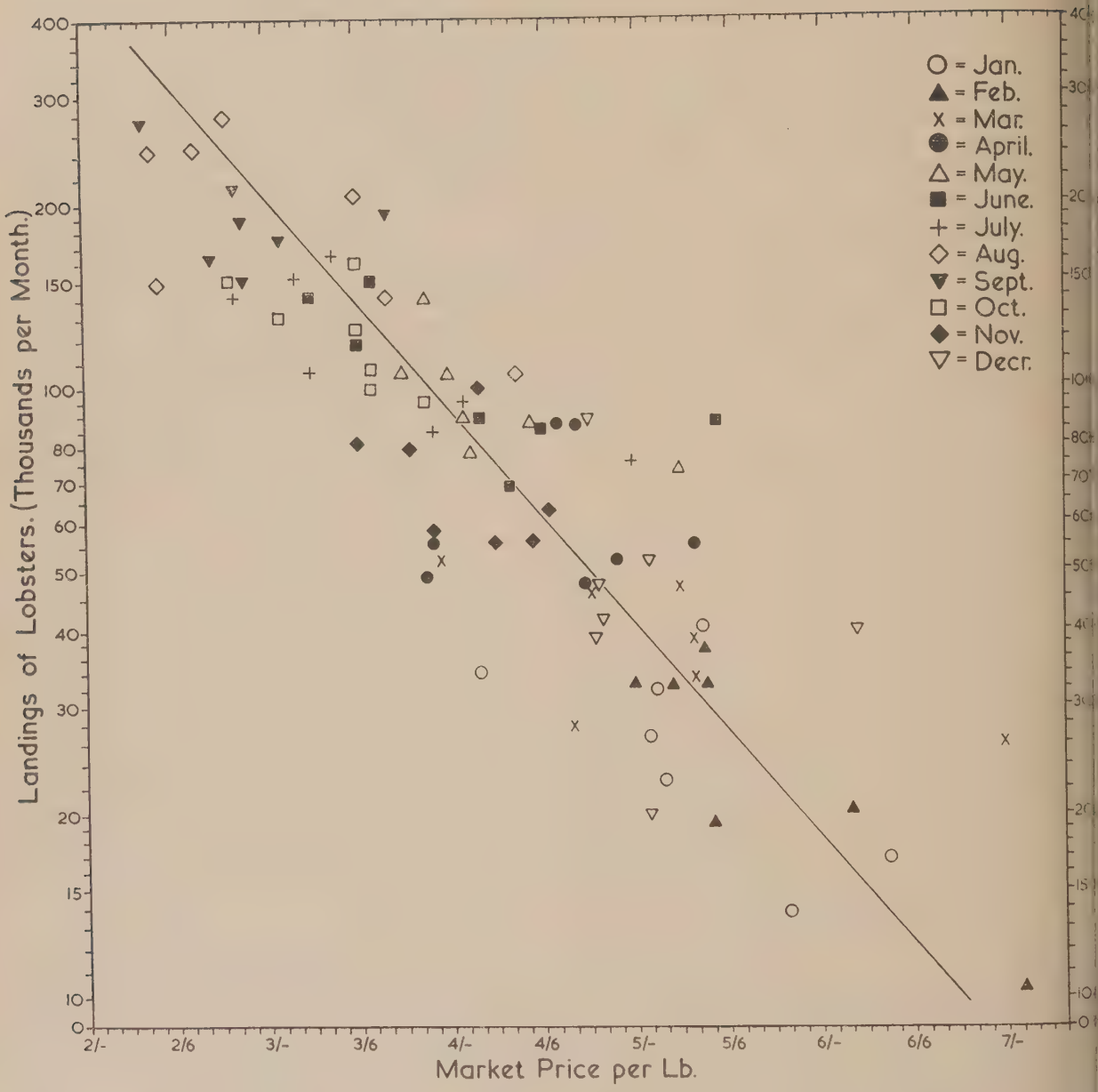

Fig. 43 The relationship between landings of lobsters in Scotland and the Billingsgate market price per lb. from monthly data over the period 1948-1954, inclusive.

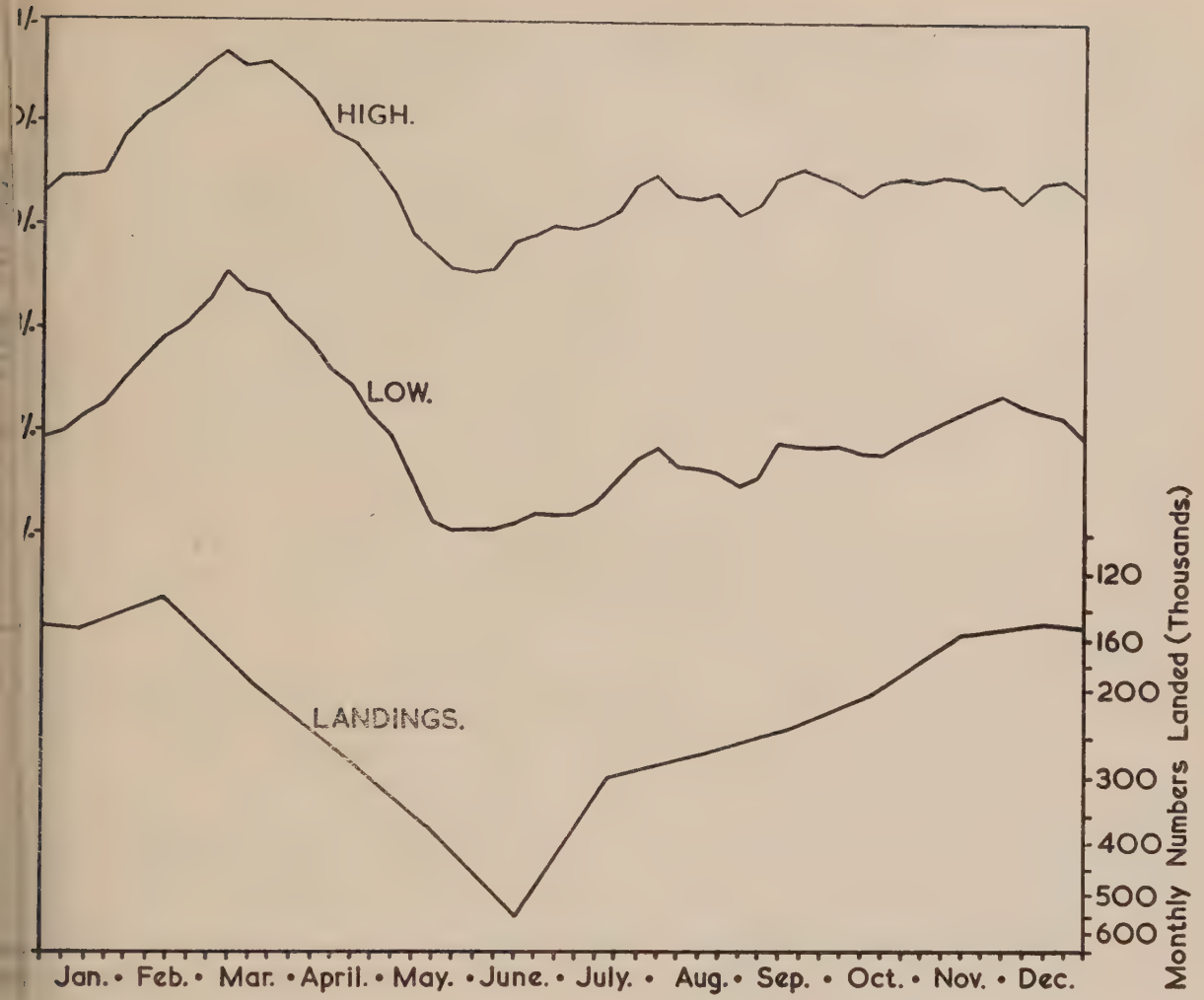

Fig. 44 The five-week moving average of the high and low prices per stone for crabs at Billingsgate meaned over the years 1948-1954, inclusive, together with the corresponding average monthly landings.

ere the boat is fully employed the cost of fuel and oil, allowing 10 to 15 miles travel daily per vorks out at roughly £30 per annum per man, allowance being made where applicable for the of tax on fuel used in fishing vessels. On the basis of a full working day about 45 creels can be per man. The average life of a creel is about one season. Creels can be bought for £1 each, of which 10/-d represents materials. Ropes, corks, pellets, tarring, repairing and recovering where ry, involve a further 10/-d per creel, making in all £45 per annum per man excluding labour. without exception fishermen make their own creels. A reasonable allowance in respect of bait be £20 although fishermen in most cases do not have to incur this expense.

above data are based throughout on whole time creel fishing. In many cases creels are worked nction with the other types of fishing. In this event fewer creels are employed. On the other hand urges set against income from lobsters and crabs should be scaled down proportionately. In the part-time fishermen having alternative occupations ashore, and where the boat is used only for a ed season, the costs might be reduced by less than the proportionate amount. On the other hand, s where this type of working predominates, the relative intensity of lobsters on the grounds is high, due to the low level of fishing intensity; in consequence, the enhanced catch per unit effort offsets the additional expenses so that the overall estimates should not be markedly different.

On the basis of 4½ working days per week—that is allowing 1½ days per week lost due to weath and taking the overall average of 35 lobsters per 100 creel hauls, a fisherman working 45 creels y land 3,545 lobsters in a year of 50 weeks. The average weight per lobster is about 20 oz., giving a yi of 4,431 lb. of lobsters for a year's full-time creel fishing. In a number of places on the east coast Scotland crabs are landed either as the main product or in addition to lobsters. On the other hand, a mixed fishery there is usually a lower average catch of lobsters per 100 creel hauls than in the fish devoted exclusively to the capture of lobsters. The catch of crabs can in general be shown to offset lower yield of lobsters and the present calculations have been based exclusively on lobsters, altho by reference to a number of mixed fisheries the figures arrived at have been found applicable.

Most lobsters and crabs landed in Scotland are despatched by passenger train to English mark Special rates are offered for consignments of minimum weight one cwt. Currently these are arou 18/-d per cwt. for lobsters and 14/6d per cwt. for crabs—station to station rates at owner's risk. Wh less than 50 lb. of lobsters or 62 lb. of crabs are to be sent, it is cheaper to despatch by normal ra which carry the additional advantages of collection and delivery within the station bounds. Such r do not generally apply to the majority of consignments made. Fishermen store their lobster catch to m up the weight to the optimum within the one cwt. In addition to the rail charge fishermen incur expense of transit to the station of despatch. This varies considerably from one area to another. On major part of the east coast it is insignificant, whilst for Orkney the steamship charge is 5/-d and Shetland 6/-d with an additional 2/-d for carriage between the boat and the train. The total one c load charges from the Outer Isles to Oban, Kyle or Mallaig, are of about the same order. On mainland from most places in the north and west of Scotland, there is a bus transport charge for cart to the railheads. Some additional expense may be involved in getting lobsters to the bus or boat.

Total transport charges for up to 95 lb. of lobsters may be taken at about 20/-d on the east c and up to 30/-d for isolated places on the west and north coasts and the islands. The cost of transi relation to the weight of lobsters increases markedly as the weight decreases from 100 lb. On the o hand lobsters can be stored for a while to accumulate the required quantity. In the case of c despatched only from the east coast the cost is about 15/-d per 95 lb. Any shellfish arriving dead at market are rejected. The extent of this loss will vary from season to season and operates disproportion against consignments from isolated places as compared with situations adjacent to railheads. How by careful packing deaths can be kept to a minimum and an average of 5% should cover deaths loss of weight during the transit of lobsters. In the case of crabs an allowance of 10% should an cover these hazards. Market expenses and dues work out at about 1/6d and selling commission is of the price realised.

The weighted average selling price for lobsters in 1954 was about 4/-d per lb. and that for c about 8/6d per stone. At these average prices 84 to 87% of the selling prices of lobsters is net cred fishermen using favourable consigning weights (Table XXII). In the case of crabs 56% of the sel price is net credit (Table XXIII). On the yearly basis of 4,431 lb. of lobsters landed per man allowing a 5% transit loss, the annual return from the sale of lobsters net of transport and mark costs works out at £740 from which must be deducted the £177 in respect of fishing cost leaving £ per annum per man as income in respect of labour. This is an overall estimate embracing wide variat For example, in some areas expenses, such as bait and fuel, are heavier and elsewhere the rev However, such variations are usually compensated for, thus higher bait and fuel costs accompa intensity of fishing above the average and consequently improved returns.

The above calculation is based on the weighted average price for 1954. Selling prices for lobster crabs vary throughout the year (Figs. 42, 44), and as transport charges and dues are at a uniform the percentage of selling prices returned to the fishermen varies, being considerably higher at the b selling prices (Tables XXII, XXIII). During 1954 the five-week moving average of the high ordi price per lb. of lobsters reached approximately 7/6d in March as compared with its low of 3/- September (Fig. 43). Of these amounts, approximately 6/6d and 2/3d, respectively, represent the re to the fishermen. The March level was nearly three times that of September. This difference is accentu if the low ordinary prices are compared. The catch per 100 creel hauls varies throughout the year, this variation is in part dependent on the fishing intensity. In a few areas more than three time

TABLE XXII

The percentage return to fishermen allowing for total transport costs of 20/–d and 30/–d respectively and 1/6d dues, etc. per 75 lb. of live lobsters delivered to market and similarly for 50 lb. at stated selling prices allowing for a 5% commission

arket selling price shillings per lb.		1/–d	2/–d	3/–d	4/–d	5/–d	6/–d	7/–d	8/–d	9/–d
ing weight 75 lb.	Percentage return 20/–d transport charge	66·3	80·7	85·4	87·8	89·3	90·2	90·9	91·4	91·8
	Percentage return 30/–d transport charge	53·0	74·0	81·0	84·5	86·6	88·0	89·0	89·8	90·3
ing weight 50 lb.	Percentage return 30/–d transport charge	52·0	73·5	80·7	84·2	86·4	87·8	88·9	89·6	90·2
	Percentage return 30/–d transport charge	32·0	63·5	74·0	79·3	82·4	84·5	86·0	87·1	88·0

TABLE XXIII

The percentage return to fishermen allowing for total transport costs of 15/–d per cwt. and 1/6d dues, etc., per 5 stones of live crabs delivered to market at stated selling prices allowing for a 5% commission

Market selling price shillings per stone	6/–d	7/–d	8/–d	8/6d	9/–d	10/–d	11/–d	12/–d	13/—
centage of market price returned	40·0	47·9	53·8	56·2	58·3	62·0	65·0	67·5	69·6

ber of lobsters are caught per unit effort in the autumn as compared with the spring. However, in places around Scotland, fishing outwith the national peak period for landings proves more nerative. In remote places, due to the proportionately heavier transit costs and hazards, summer ng may provide an insufficient reward to make it attractive as compared with other work. On the hand, where fishing is not carried on throughout the year, the choice of a fishing season is not in ses available since on exposed coasts the risks in creel fishing may be excessive during the winter. factor will operate to some extent in all areas against the enhanced profitability of winter fishing. he accentuation of the difference between the selling price after deduction of transport and eting expenses during winter, as compared with summer, affords an additional margin favourable g-term storage operations (see p. 75).

g. 45 shows the weighted average price of lobsters and crabs, respectively, for each of the years 1954, inclusive. Variation from year to year in the average price does not necessarily imply a rtionate variation in profitability since both landings and the number of fishermen employed are onstant. On the other hand, it is not likely that these factors will completely account for the ences in the average prices. For example, the weighted average price of lobsters in 1950 was about per lb. as compared with 4/6d in 1951. It is reasonable to assume that the profitability of creel g will follow roughly the weighted average prices for the year.

BIOMETRICS

OBSTERS

bsters are found in the coastal fringe, on or near rocky bottom, beyond the low water mark. Even cky coasts the bottom at depths of more than 15 fathoms tends to have patches of sand or mud and in general, increase with the depth. This applies except in areas of very strong current. In such the rocks are scoured, and also being devoid of seaweed they are unsuitable as a habitat for lobsters, seek shelter among the weed in holes and crevices of the rock. In general, fishing is most readily uted in shallow water, and it is here possible for fishermen to know the nature of the bottom with

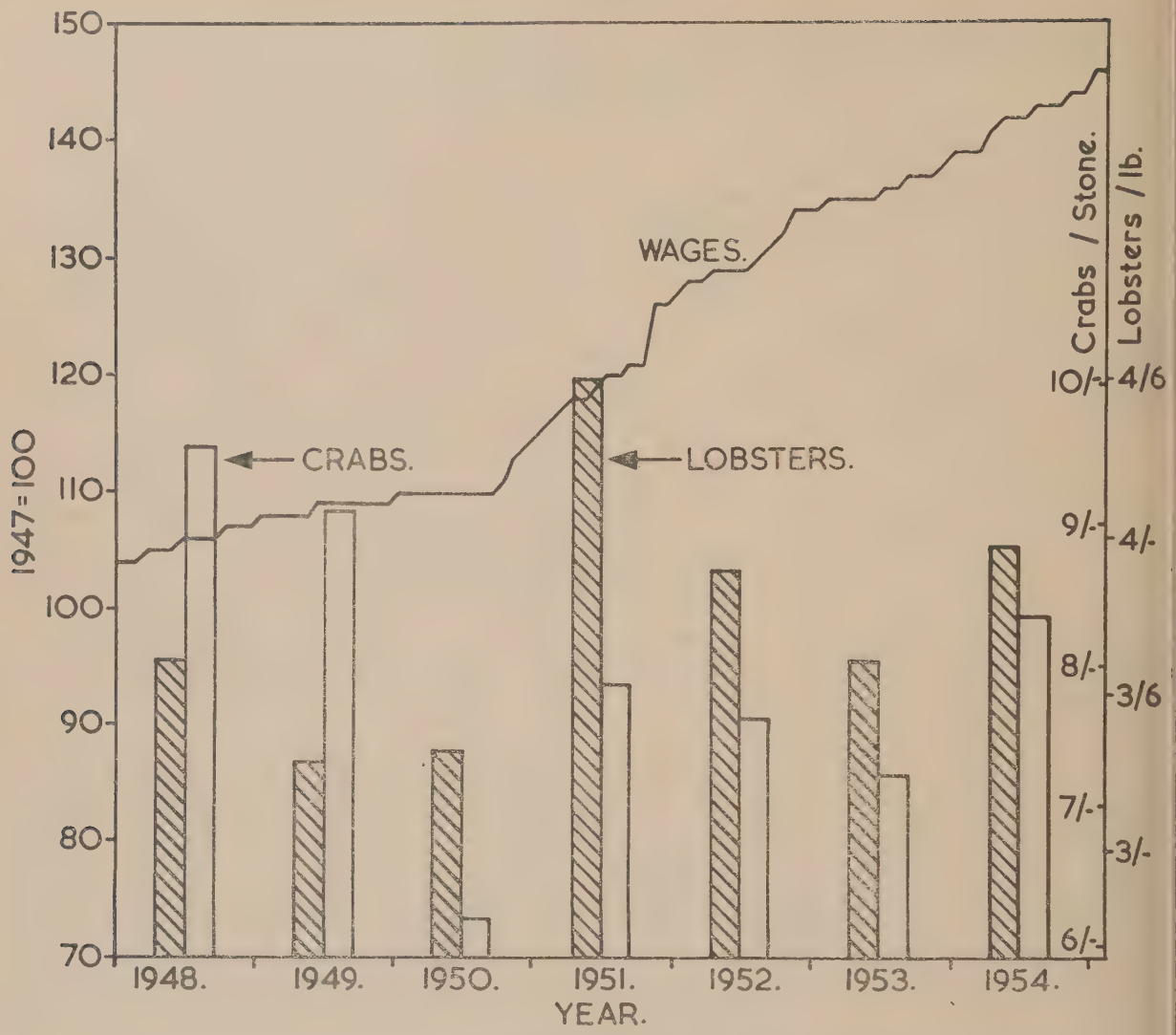

Fig. 45 The weighted mean Billingsgate price of lobsters and crabs, respectively, for each of the years 1948-1954, inclusive, and the Ministry of Labour weekly wage index for all workers over the same period. 1947=100 in all cases.

more certainty than elsewhere. Whilst lobsters may well exist at greater depths in areas of suit bottom, the effective distribution is within 30 fathoms.

Lobsters are almost entirely captured by means of creels. Observations based on data from fishing are subject to considerable limitations imposed by the sampling gear, which is highly selec in respect of both small and large lobsters (Thomas, 1953). Furthermore, area to area differences in types of creel, so that regional comparisons, although justified in a broad way, may not be stri valid in detail. Length distributions at six stations around the coast of Scotland are shown in Fig. The data have been restricted to male lobsters as these are more readily interpreted (Thomas, 19 A high intensity of fishing exists off the Berwickshire coast as compared with other areas. This is sim to the conditions found in 1948 (Thomas, 1951).

Length distribution of lobsters landed by the commercial fishery almost invariably show a seaso variation, larger lobsters being landed during the summer (Table XXIV).

A major reason for this higher average size of lobsters in summer is the shift of fishing to the more exposed and therefore less exploited grounds during the good weather (see also p. 69). In some areas where crabs are fished as well as lobsters, the seasonal offshore fishing on the primarily crab grounds will result in a variation in the size of lobster landed.

TABLE XXIV

The size composition of lobsters landed at Rousay, Orkney, expressed as a percentage of the total number of lobsters of 9 in. and over in respect of certain length groups, by months, averaged over the years 1931-1938 and the average length of lobster landed, all data relating to males only

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
9 in.	21	23	23	15	12	12	13	16	24	20	21	21
10 in.	24	25	26	17	17	16	15	22	29	29	26	28
11 in.	23	23	19	23	20	17	17	19	26	25	27	25
12 in.	19	17	17	20	18	19	20	21	18	20	21	16
13 in.	10	8	10	12	13	12	13	15	9	10	10	11
Average size	11·5	11·3	11·4	11·7	11·9	11·9	11·9	11·8	11·3	11·4	11·4	11·4

A natural variation in the length distribution of lobsters in any stock will be occasioned if the main casting season in respect of different length groups is not coincident. The length composition shown in Table XXIV suggests such a condition in the Orkney stock. These data relate to the island of Rousay where there is ample sheltered fishing and where the intensity is moderate in relation to the stocks so that the need to seek alternative grounds is not pressing. The differences in the percentage of males in the various lengths is compatible with a casting season reaching its peak in about June for 8″ lobsters, which will recruit the 9″ stock, June/July, July and August for 9″, 10″ and 11″ lobsters, respectively. Over the period July to October, weather conditions are not likely to impose a limitation on these particular grounds.

Factors such as the above give rise to discrepancies when length composition is used as a basis for calculating the mortality rates. They should not, however, impose wide margins of inaccuracy. The annual mortality rate in the Eyemouth Fishery District during 1950-52 was about 70-75% compared with about 34% in Orkney (Thomas, 1955). Tagging experiments have shown that lobsters do not undertake extensive migrations and it is possible for an intensive fishing characterised by low average size to be within a few miles of an area of underfishing. In such instances there will be a tendency for colonisation of the heavily fished area from the outside although this may be slow. The factor is of importance in the day to day moving of creels within an area and in seasonal changes of the fishing grounds.

The catch of lobsters per unit effort at Rousay, Orkney, is given in Table XIX (p. 69). It is highest during August, September and October, when it averages about 67 lobsters per 100 creel hauls as compared with about 36 during May, June and July. Whilst the greater activity of lobsters at higher temperatures will account for some of this difference, a further factor, particularly having regard to the considerable difference between July at 38·7 and August at 64·2, is the fact that many lobsters are moulting in the months prior to August and are therefore not readily caught in creels. These serve to recruit and augment the catchable stock, commencing in August.

Apart from physiological differences throughout the year, estimates of the relative densities of stock based on the catch per 100 creel hauls are subject to limitation in the accuracy of this measure. In winter, 100 creel hauls will not represent the same effort as 100 creel hauls in summer. For instance, creels may be lifted twice per day, on occasions, in good weather, whilst being left for two or even more days when the weather is bad. However, the catch, in both instances, is reasonably comparable despite the difference in length of fishing (Thomas, 1951), and differences of the order demonstrated above in adjacent months cannot be attributable to this factor.

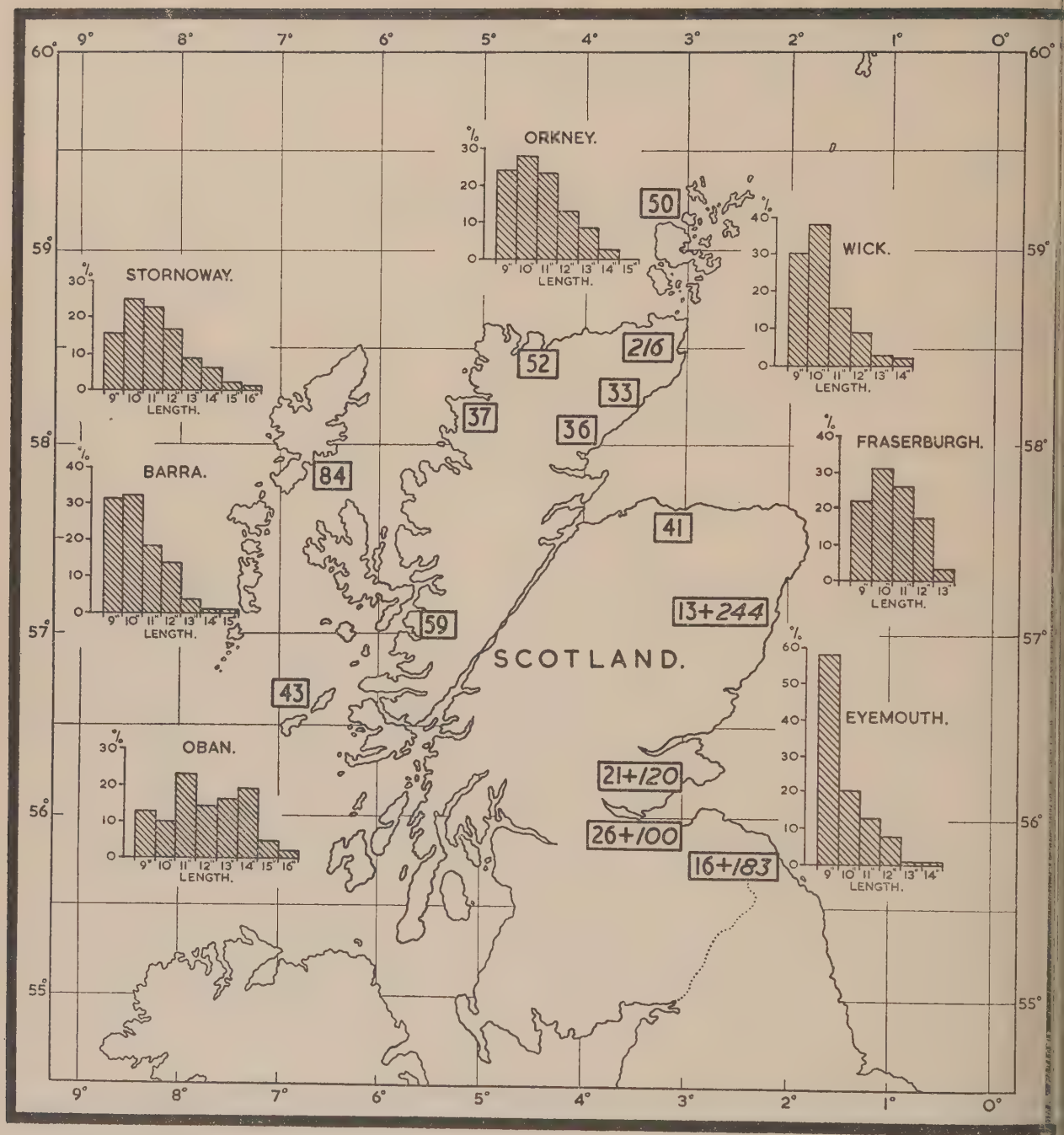

Fig. 46 The percentage length distribution of male lobsters of legal size, taken by creels, and the weighted average annual catch per 100 creel hauls of lobsters (upright figures) and crabs (oblique figures), respectively, at certain stations around the coast of Scotland.

The seasonal variation in catch per unit effort tends to be slight in areas of low fishing intensity and greatest where fishing is heavy, since on the latter grounds recruitment to the stock of marketable lobsters at casting results in a higher proportionate increase in the stock than in areas of light fishing intensity. The difference is particularly marked in the Eyemouth Fishery District (Table IV, p. 16). In this area the crab fishery is a factor. On the other hand, creels are moved out on to the crab grounds in May because lobsters are not being caught in sufficient number inshore. They are moved back on to the lobster grounds in August/September when the lobsters are caught in greatest number per unit effort due to the previous recruitment. In this area, in addition to the autumn peak in catch per unit effort, there is a minor peak around April. This may largely be attributable to the movement on to the lobster fishing grounds made possible by improved weather, but amongst other subsidiary factors, the increased activity of the lobster as the temperature rises will play a part.

Area to area differences in catch per unit effort will, to some extent, represent differences in gear and methods but they will, none the less, broadly represent regional differences in stock densities. The catches per 100 creel hauls averaged over the year for various Fishery Districts are shown in Fig. 46.

Legislation was introduced in 1951 requiring the return to the sea of lobsters carrying spawn. In consequence, data involving female lobsters since that time will be biased to an unknown extent by the operation of this regulation. An account of the sex ratio, the percentage of berried females and the seasonal variation, together with a consideration of the effects of varying mortality rates on these figures, is given by Thomas (1955). The length distribution of males during recent years (Fig. 46) suggests that the conditions in the fishery, other than those resulting from the 1951 legislation, are mainly similar to those obtaining previously.

The carapace length provides a more precise measurement than overall length and is the basis of Canadian legislation regarding landing sizes. The relationship between overall length and carapace length in the lobster is given by Pope (1955), who also states the length/weight relationship. In respect of marketable sized lobsters his equations are:—

$$\text{For males} \quad L = 2{\cdot}507\ C + 25{\cdot}9$$
$$\log W = 3{\cdot}551\ \log L - 7{\cdot}29$$

$$\text{For females} \quad L = 2{\cdot}678\ C + 15{\cdot}4$$
$$\log W = 3{\cdot}039\ \log L - 6{\cdot}10$$

where L is the overall length and C the carapace length, both in millimetres, and W the weight in ounces.

(b) Crabs

The edible crab occurs mainly outside the rocky coastal fringe on sand or shingle, generally interrupted by occasional patches of rock. In consequence, fishing is usually prosecuted at depths of more than 30 fathoms.

Williamson (1899) gives data for the crab fishery of the south-east coast of Scotland. He found that first maturity corresponded with a carapace width of about 5″, whilst the majority of crabs matured at under 6″. The main spawning season is November, December and January, and mature females spawn every other year, casting alternately. The peak hatching season is July and August, and the main casting season July to September.

The results of crab marking experiments carried out around the coast of Scotland over the period 1916 to 1924 are summarised in the Interdepartmental Committee on Crabs and Lobsters, Report on Crabs (1930). This also gives considerable data concerning the crab fishery in England. Meek (1904), dealing with the fishery of the Northumberland coast, gives particulars of the composition as to length, sex and conditions of crabs landed at different seasons. Experiments on the migration of crabs carried out in this area are also reported (Meek, 1905). Observations at various stations may show wide differences as to length, sex ratio and migratory tendencies, and further work is necessary in order to resolve the many seeming anomalies.

The length distribution of crabs landed at Burnmouth, Fraserburgh and Wick, respectively, are given in Fig. 47. Length distributions and sex ratios are subject to seasonal and regional variation. The

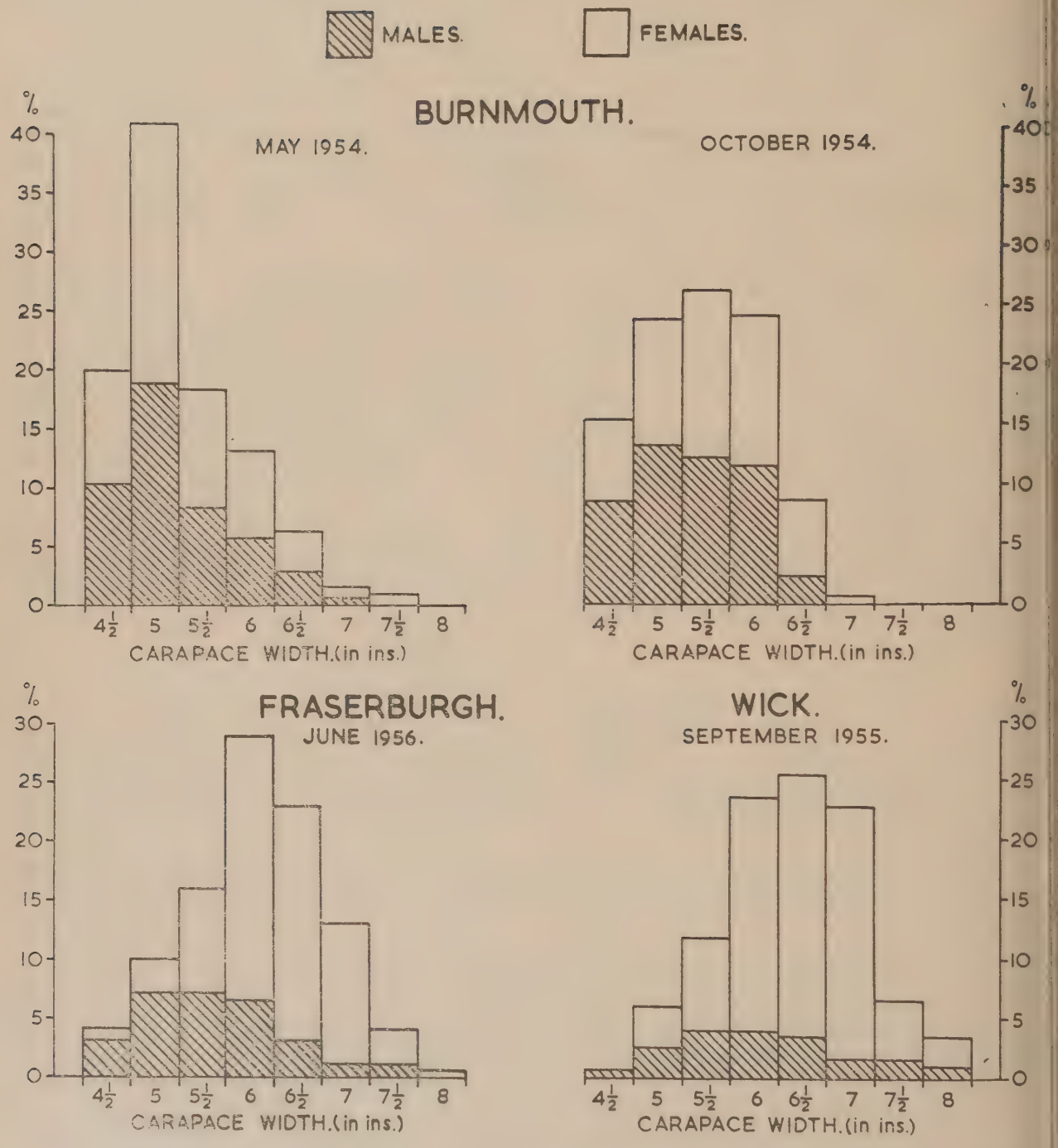

Fig. 47 The composition and percentage length distribution of marketable crabs taken in creel fishing at Burnmouth, Fraserburgh and Wick, respectively, at stated seasons.

atch of marketable crabs per 100 creel hauls in certain Districts of the east coast of Scotland is given n Fig. 46. Boats landing at Wick take an average of 2·8 crabs per creel haul. In this case, crews are vorking exclusively for crabs. Elsewhere the number of crabs per unit effort is less, being combined vith a varying number of lobsters. In most areas fishermen work for both lobsters and crabs, and there s commonly a seasonal switch of emphasis between the two. This is reflected in the catch per 100 creel auls, which usually falls off in the summer (Tables IV, V, VI, pp. 16, 19, 21, respectively). This, however, loes not apply to those boats from Wick which are working exclusively for crabs (Table XII, p. 40). The summer switch of effort from crab to lobster fishing is largely attributable to the accessibility of icher lobster grounds in good weather, the ability of lobsters to withstand adverse travel conditions nore so than crabs, and the fact that during the summer a large proportion of the catch of crabs are oft and out of condition.

DISCUSSION

Considerable differences exist from District to District in the length of the coastline and the area of ie grounds suitable for creel fishing. Information on the latter subject is limited to known fishing grounds hich have, as far as possible, been indicated in preceding figures. On the east coast it is possible that ost of the available ground is fished although this is not invariably the case elsewhere. The charts epict the intensity of the fishing but this does not necessarily reflect the density of the population or e available fishing. It certainly will not do so in many instances. In all areas, but particularly in ofting districts, regions adjacent to the boat base tend to be more heavily fished than those more stant, whilst, especially with small boats, offshore grounds are less exploited than those close in. This plies even apart from the limitations imposed by exposure, since hand hauling from shallow water is sier and nearby grounds have an obvious advantage in necessitating a short travelling time. In some eas prolific lobster and crab stocks are almost unfished. In some places under existing circumstances ey can be regarded as "unfishable" due to the exposure and the limitations of the fleet and markets. ithout a considerably increased demand, some lobster grounds—to take as an extreme example, the annan Islands—will never attract sufficient exploitation to represent an optimum level of fishing in ation to the stocks. Due to their exposure these places can be worked only during spells of good weather, d although this would provide sufficient opportunity under conditions such as obtain in some other untries—for instance, Canada—the existing British industry would not sustain such fishing. Similar tors, operating to a lesser degree and having regard to the size of available boats, impose severe sonal limitations on fishing with the result that, in a number of areas, the existing exploitation falls ort of the optimum level.

The intensity of the fishing in relation to the available stocks is reflected in the catch per unit effort. e catch per 100 creel hauls has been given for a number of places (Fig. 46). However, in making nparison between areas, differences of methods and fishing efficiency introduce discrepancies. Where h lobsters and crabs are marketed, the individual catches per unit effort are not comparable with those m fisheries devoted exclusively either to lobsters or crabs. This is particularly the case as the methods opted will often be directed primarily at the capture of one or other fish, and this emphasis will usually nge with the season. It may at times change from week to week according to weather conditions. ilarly, although to a lesser extent, other types of fishing, for instance seine nets or lines, will introduce ariable into the measure of effort applied to creels. A crew so engaged, if striking good hauls of white , may continue at that fishing and leave the creels unlifted for a further day. Even where such factors not apply, a direct comparison is not necessarily valid since the efficiency of individual fishermen y and the practices common in certain districts may be less effective than those prevalent elsewhere. h factors as the duration of fishing, the working of creels singly or in fleets, the number of creels oloyed per man, the type of creel (single eye, double eye, the presence or otherwise of a non-escape ice and other variants) the types of bait, the size of boat, the equipment (for instance, creel hauler /or echosounder) all have a bearing on the measure of effort represented by the creel haul. Nevertheless, measure is subject to fewer objections than any other and even without evaluating the effect of the ve factors, catch per 100 creel hauls provides the best and a reasonable basis for comparisons.

The composition and length distribution of the stock afford further means of comparison. The cr is a highly selective sampling device (Thomas, 1953). The extent of this may vary from one region another. Nonetheless the composition of the stock does reflect the mortality rate, although difficult arise in unevenly fished areas (Thomas, 1955). To obtain the optimum sustained yield from a stock sufficient proportion of individuals must be allowed to mature and reproduce. The maturity leng for the lobster in Scottish waters may be taken as about 10½-11″. In the lobster, as in most animals, t rate of growth falls off as age increases, so that there is an advantage in fishing young lobsters. Also, w the onset of maturity the rate of growth of the female lobster is considerably reduced since casti occurs only every other year, alternating with spawning. The best selling weight for individual lobst in Britain is about 1-1½ lb., corresponding with a length of around 10½″. Having regard to all th factors, and in conjunction with a 9″ minimum legal landing length, a fishing intensity resulting in overall average length of about 10½″ for marketable lobsters, as caught by creels, should repres something approaching optimum exploitation. This average size is not always attainable. Underfishi may be inevitable on exposed grounds whilst in areas of mixed fishing the capture of crabs may justifiab result in a lower average length, for lobsters.

Around Scotland the regions which could withstand an increase in creel fishing are mainly loca on exposed coasts, where communications inland are difficult and where there are few harbours and t fleet is composed of small craft. Operations in such areas are most readily undertaken during the summ months. Unfortunately that coincides with a low market price and high transit loss. The market pr may even fall so that fishing in these places becomes no longer worthwhile. Without some increase the market price it is unlikely that the summer fishing in these districts will be materially increas Under present circumstances any tendency to higher landings may depress the market price below economic level, as was found by the ring-netters at Kyle and Mallaig. Fishing at other seasons is, in p governed by the weather conditions and alternative occupations. There may well be opportunity some increased exploitation by extending the season and by more intensive and planned worki although in many cases the small craft at present employed are not very suitable for ranging far fr base. Loss of gear may also be a problem where creels are set too far from the anchorage to be reac and lifted with the warning of bad weather. Provision of bigger boats could materially prolong practicable fishing season and enable crews to range over a wider area and work in less favour weather. On the other hand, facilities near to the townships, such as anchorages, beaches, etc., not always suitable for larger boats. Further, it is doubtful if boats of upwards of 25 ft. overall len are an economic proposition unless used on a more or less whole time basis. In this latter context impracticability of alternative fisheries such as crabs and lines, which can be undertaken when lobste becomes too hazardous, is a material obstacle. Such operations are precluded by the difficulty of get fresh fish marketed, since ice cannot economically be made available and communications are diffi and slow. In any case, this type of fishing is associated with whole time fishermen and would not l itself readily to the crofting way of life.

Some of the exposed west coast grounds are already being worked on an increasing scale, and co be further exploited, by boats of 35 ft. upwards based on harbours and engaging in weekly cruises. development would appear to offer the best opportunity for exploitation of the stocks. On the other ha it is the occupation of whole time fishermen and an intensive operation, and as such does not contri to the solution of the crofters' problem, except in so far as it develops the industry of the areas in a ger way. The boats already operating are, in some cases, resented by local fishermen, who feel that t own opportunities are thereby diminished. Development of large-scale fishing is in no small mea held back by the inability of existing markets to assimilate any considerable increase in supplies. problem has, to some extent, been eased by the growth in export of lobsters to Holland, Norway France, which occurred in 1955. Operators have noted a considerable increase in the Billingsg prices whilst they are holding back consignments in order to build up an export order. Further eff to export lobsters would ease the problem of summer over-supply and this could do much to stimu summer fishing by crofters. On the other hand, the high import duties on shellfish common in Europ countries restricts this outlet.

Processing factories also provide a limited offtake for summer gluts. This, to some extent, res

a floor price for lobsters. At present, however, the processing facilities available cannot take, at an ceptable price, all the lobsters which could be offered. In this respect, the difficulty is to provide work maintain the plant in action at those seasons when lobsters are too dear for processing. The development a winter crab fishery as an alternative to lobsters may help this problem. However, to a considerable tent, crabs are out of condition on the Scottish west coast during the early months of the year and her alternatives must be sought. The same principle applies within the fishery. Boats work lobsters ilst the conditions are favourable, at other times the larger boats require alternative employment. r such craft, working from harbours, crabs and, where ice is available, white fish may afford some portunity.

For many years a partial solution to the problem of the glut has been sought in ponding summer-ught lobsters for sale in winter markets. This certainly helps. However, the existing winter market is elf sensitive to supply, and any considerable extension of this practice could destroy its own object.

Exporting, ponding and packing with ice in hot weather are beyond the opportunity of the small herman and are mainly outwith the sphere of the whole time fisherman. Such activities can be readily dertaken only by marketing organisations. In this connection the beneficial effects of the merchanting Orkney and at Oban are noteworthy (see p. 74). Nevertheless, the small operator could, in many ses, reduce his costs by more careful packing, thereby diminishing transit loss. Frequently the fishing ild be better planned, both as to season and in the exploitation of the maximum area of ground essible to the craft employed. Also, in some cases more efficient fishing methods could be adopted. yond this, the provision of larger boats, harbours and improved lines of communication may have le effect unless accompanied by some extension of the market, either within Britain or by exporting, both. Fundamentally, creel fishing must compete with other occupations for the available labour ce, which is often limited.

SUMMARY

1. The harbour facilities and availability of anchorages and beaches dictate the type of craft used fo creel fishing. This in turn sets the methods of fishing adopted.
2. The commonest trap is the double, open-eyed, braided creel. This is subject to a variety of minc modifications. In addition, slatted creels and a parlour trap are employed locally.
3. The working of creels in fleets, and the use of creel haulers, is more common in crab or mixed cra and lobster fishing and on the east Scottish coast. Accurate siting of individual creels is most practise in crofting districts.
4. Landings of lobsters are highest in August, mainly due to the high level of fishing effort, but also t the increased activity of the animal. Crab landings are less subject to seasonal variation.
5. The composition of the fleet, the fishing and marketing methods adopted, the effort and the catch the grounds and the trends in landings are described for each fishery District.
6. Due to the poor communications elsewhere, crab fishing is largely confined to the east coast. crab fishery has developed in recent years, based on the west coast ports of Kyle of Lochalsh and Mallaig
7. The average size of lobster landed is lower on the east coast than on either the west coast or i Orkney. The catch per 100 creel hauls is also lowest on the east.
8. Whole time creel fishing, whilst common on the east coast, is rare elsewhere.
9. Whilst landings of lobsters in Scotland as a whole are at a high level, being above the average for th last sixty years, the east coast has gained in its proportion of the total landings at the expense of the wes
10. Landings of crabs, almost entirely accountable to the east coast, are currently at their highest lev for the past fifty-six years. This is largely attributable to the recent establishment of processing plants.
11. The activities of merchants provide a stimulus to lobster fishing and, in general, improve th fisherman's return.
12. The market price of both lobsters and crabs is closely related, in an inverse manner, to the supplie An average margin of about 2/6d per lb. can be anticipated in comparing the summer and winter pric from the point of view of long-term storage of lobsters.
13. The costings and profitability of creel fishing is examined.
14. The length composition of marketable sized lobsters caught by creels generally reflects the fishi intensity. Certain places on the east coast are heavily fished whilst many areas on the west coast cou withstand an increased exploitation.
15. The potentialities for the development of creel fishing, and possible means of achieving this, a discussed.

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APPENDIX—TABLE I

HARBOURS AND ANCHORAGES

District and Name of Creek or Place[1]	Harbour H Pier P Anchorage A Beach or Slipway B	Suitability of Harbour or Pier At all states of tide F For part tide only T for boats of overall lengths				Safe in all weathers S Safe only in fair weather U Beaches excluded
		40–55 ft.	30–40 ft.	20–30 ft.	under 20 ft.	
EMOUTH						
Burnmouth	H	T	T	F	F	S
Eyemouth	H	T	T	F	F	S
St. Abbs	H	T	T	F	F	S
TH						
Cove	H	T	T	T	T	U
Skateraw	H	—	—	T	T	U
Dunbar	H	T	F	F	F	S
North Berwick	H	T	F	F	F	S
Port Seton	H	T	T	T	T	S
Cockenzie	H	F	F	F	F	S
Fisherrow	H	T	T	T	T	S
Leith	H	F	F	F	F	S
Newhaven	H	T	T	T	T	S
Granton	H	F	F	F	F	S
Aberdour	H	T	T	T	T	S
Burntisland	H	F	F	F	F	S
Pettycur	H/B	T	T	T	T	U
Kirkcaldy	H	F	F	F	F	S
Dysart	H	—	T	T	F	S
Wemyss	P/B	—	T	T	T	U
TRUTHER						
Methil	H	F	F	F	F	S
Leven	H	—	T	T	T	U
Largo	H	—	T	T	T	U
Eli	H	—	T	T	T	U
St. Monance	H	T	T	T	T	S
Pittenweem	H	T	T	T	T	S
Anstruther	H	T	T	T	T	S
Crail	H	—	T	T	T	S
Kingsbarns	B	—	—	—	—	—
St. Andrews	H	—	T	T	T	S
Tayport	H	T	T	T	T	S
TROSE						
Easthaven	B	—	—	—	—	—
Arbroath	H	T	T	F	F	S
Auchmithie	H	T	T	T	T	U
Ferryden	B	—	—	—	—	—
Montrose	H	F	F	F	F	S
Johnshaven	H	—	T	T	F	S
Gourdon	H	T	T	T	F	S
Inverbervie	H	—	T	T	T	S
RDEEN						
Catterline	P/B	—	T	F	F	U
Stonehaven	H	F	F	F	F	S
Skateraw	P/B	—	—	T	T	U
Downies	B	—	—	—	—	—
Portlethen	B	—	—	—	—	—
Cove	H	—	—	T	T	U
Aberdeen	H	F	F	F	F	S
RHEAD						
Newburgh	H	F	F	F	F	S
Collieston	H	T	T	T	F	U
Whinnyfold	H	T	T	T	F	U

[1]The creeks are shown in the Districts before re-arrangement

APPENDIX—TABLE I (*Continued*)

District and Name of Creek or Place	Harbour H Pier P Anchorage A Beach or Slipway B	Suitability of Harbour or Pier At all states of tide F For part tide only T for boats of overall lengths				Safe in all weathers S Safe only in fair weather U Beaches excluded
		40–55 ft.	30–40 ft.	20–30 ft.	under 20 ft.	
PETERHEAD—*(Continued)*						
Port Errol	H	T	T	F	F	U
Boddam	H	T	T	F	F	S
Peterhead	H	F	F	F	F	S
Buchanhaven	H/B	—	T	F	F	U
FRASERBURGH						
St. Combs	B	—	—	—	—	—
Inverallochy	B	—	—	—	—	—
Cairnbulg	P/B	T	T	T	T	U
Fraserburgh	H	F	F	F	F	S
Sandhaven	H	—	T	T	T	S
Rosehearty	H	—	T	T	T	S
Pennan	H	—	T	T	T	S
MACDUFF						
Crovie	P/B	—	—	T	T	U
Gardenstown	H	—	T	T	F	S
Macduff	H	F	F	F	F	S
Banff	H	T	T	T	T	S
Whitehills	H	T	T	F	F	S
Portsoy	H	T	T	T	T	S
Sandend	H	T	T	T	T	S
BUCKIE						
Cullen	H	—	T	T	T	S
Portknockie	H	T	F	F	F	S
Findochty	H	T	T	T	F	S
Buckie	H	F	F	F	F	S
Portessie	B	—	—	—	—	—
Portgordon	H	T	T	T	F	S
LOSSIEMOUTH						
Lossiemouth	H	T	F	F	F	S
Hopeman	H	T	T	F	F	S
Burghead	H	T	F	F	F	S
Findhorn	H	T	T	T	T	S
Nairn	H	—	T	T	F	S
Ardersier	P/B	T	T	T	T	S
Inverness	H	F	F	F	F	S
HELMSDALE						
Avoch	H	T	T	T	T	S
Cromarty	H	T	T	F	F	S
Balintore	H	—	T	T	T	S
Portmahomack	H	T	T	T	F	S
Embo	P/B	—	—	T	T	U
Golspie	P/B	—	T	T	T	U
Brora	H	—	T	T	T	U
Helmsdale	H	T	T	F	F	S
Dunbeath	H	T	T	T	F	U
WICK						
Latheronwheel	P/B	—	T	T	T	U
Forse	B	—	—	—	—	—
Lybster	H	T	T	T	F	S
Whaligoe	B	—	—	—	—	—
Sarclet	H	—	—	T	T	U
Wick	H	F	F	F	F	S
Ackergill	H	T	T	F	F	S
Keiss	H	T	T	T	F	S
Freswick	P/B	—	—	T	T	U
Duncansby	A/B	—	—	—	—	U
Huna	B	—	—	—	—	—

APPENDIX—TABLE I (*Continued*)

District and Name of Creek or Place	Harbour H Pier P Anchorage A Beach or Slipway B	Suitability of Harbour or Pier At all states of tide F For part tide only T for boats of overall lengths 40–55 ft.	30–40 ft.	20–30 ft.	under 20 ft.	Safe in all weathers S Safe only in fair weather U Beaches excluded
RBERT—(*Continued*)						
Inveraray	H	—	T	T	F	S
Tighnabruaich	P/A/B	F	F	F	F	S
Innellan	P/B	F	F	F	F	U
Dunoon	P/A/B	F	F	F	F	S
Kilcreggan	P/B	F	F	F	F	U
Bute Is.						
Rothesay	H	T	F	F	F	S
Pt. Bannatyne	P/B	F	F	F	F	U
Arran Is.						
Lochranza	P/B	F	F	F	F	U
,,	H	—	T	T	T	U
Lamlash	H	F	F	F	F	S
Brodick	P/A/B	F	F	F	F	U
ર						
Gareloch	P/A/B	—	T	T	T	S
Helensburgh	P/A/B	F	F	F	F	U
Greenock	H	F	F	F	F	S
Gourock	P/A/B	F	F	F	F	U
Wemyss Bay	P/A/B	F	F	F	F	U
Largs	P/A/B	T	T	T	T	U
Millport	P/A/B	F	F	F	F	U
Fairlie	P/A/B	F	F	F	F	U
Ardrossan	H	F	F	F	F	S
Saltcoats	H	—	T	T	T	U
Irvine	H	T	T	T	F	S
Troon	H	F	F	F	F	S
Ayr	H	F	F	F	F	U
Dunure	H	—	T	T	T	U
Maidens	H	T	T	T	T	U
Girvan	H	T	T	T	F	S
Ballantrae	P/A	—	T	T	T	U
Stranraer	H	F	F	F	F	S
Kirkcolm	B	—	—	—	—	—
Portpatrick	H	F	F	F	F	U
Port Logan	B	—	—	—	—	—
Drummore	H	—	T	T	T	S
Sandhead	B	—	—	—	—	—
Port William	H	T	T	T	T	U
Whithorn Is.	H	T	T	T	T	S
Garlieston	H	T	T	T	T	S
Wigtown	H	—	T	T	T	S
Creetown	B	—	—	—	—	—
Kirkcudbright	H	T	T	T	T	S
RNOWAY						
Bragar	B	—	—	—	—	—
Showboast	A/B	—	—	—	—	U
Carloway	P/A/B	—	T	T	T	U
Breasclete	A/B	—	—	—	—	U
Gt. Bernera Is.	A/B	—	—	—	—	S
Valtos	P/A/B	—	T	T	T	U
Meavaig	A/B	—	—	—	—	S
Ardhasig	A/B	—	—	—	—	S
West Tarbert	P/B	F	F	F	F	U
Northton	B	—	—	—	—	—
Leverburgh	H	F	F	F	F	S
Strond	A/B	—	—	—	—	U
Rodel	P/A/B	F	F	F	F	U
Manish	A/B	—	—	—	—	S
Geocrab	A/B	—	—	—	—	U
Stockinish	A/B	—	—	—	—	S
Grosebay	A/B	—	—	—	—	U

APPENDIX—TABLE I (*Continued*)

District and Name of Creek or Place	Harbour H Pier P Anchorage A Beach or Slipway B	Suitability of Harbour or Pier At all states of tide F For part tide only T for boats of overall lengths				Safe in all weathers S Safe only in fair weather U Beaches excluded
		40–55 ft.	30–40 ft.	20–30 ft.	under 20 ft.	
STORNOWAY—(*Continued*)						
Scadabay	A/B	—	—	—	—	S
Tarbert	P/A/B	F	F	F	F	S
Scalpay Is.	A/B	—	—	—	—	S
Lemreway	A/B	—	—	—	—	S
Marivig	A/B	—	—	—	—	S
Cromore	A/B	—	—	—	—	S
Leurbost	A/B	—	—	—	—	S
Loch Grimshader	A/B	—	—	—	—	S
Stornoway	H	F	F	F	F	S
Bayble	P/B	—	T	T	T	U
Callicvol	H	—	—	T	T	S
BARRA						
Berneray Is.	A/B	—	—	—	—	S
North Uist Is.						
Solias	B	—	—	—	—	—
Loch Maddy	P/A/B	F	F	F	F	S
Benbecula Is.	P/B	—	—	T	T	U
South Uist Is.						
Loch Skiport	P/A	F	F	F	F	S
Loch Boisdale	H	F	F	F	F	S
Eriskay Is.	A/B	—	—	—	—	S
Barra Is.						
Castlebay	H	F	F	F	F	S
North Bay	A/B	—	—	—	—	S
ORKNEY						
Birsay	B	—	—	—	—	—
Sandwick	B	—	—	—	—	—
Stromness	H	F	F	F	F	S
Orphir	P/B	F	F	F	F	U
Scapa	P/B	F	F	F	F	U
Holm	P/B	T	F	F	F	S
Deerness	A/B	—	—	—	—	S
Tankerness	A/B	—	—	—	—	S
Kirkwall	H	F	F	F	F	S
Evie	B	—	—	—	—	—
N. Ronaldsay Is.	P/B	F	F	F	F	U
Papa Westray Is.	P/B	T	T	T	F	U
Westray Is.	H	F	F	F	F	S
Sanday Is.	P/A/B	F	F	F	F	U
Eday Is.	P/A/B	F	F	F	F	U
Rousay Is.	P/B	T	T	F	F	U
Stronsay Is.	P/A/B	F	F	F	F	S
Shapinsay Is.	P/A/B	F	F	F	F	S
Graemsay Is.	A/B	—	—	—	—	S
Hoy Is.						
Hoy	B	—	—	—	—	—
Walls	P/A/B	F	F	F	F	S
Flotta Is.	A/B	—	—	—	—	U
Burray Is.	P/A/B	F	F	F	F	U
S. Ronaldsay Is.	H	F	F	F	F	S
SHETLAND						
Hillswick	B	—	—	—	—	—
Aith	P/A/B	F	F	F	F	S
Sandness	B	—	—	—	—	—
Walls	P/A/B	F	F	F	F	S
Scalloway	H	F	F	F	F	S
Tolob	B	—	—	—	—	—
Boddam	B	—	—	—	—	—
Levenwick	A/B	—	—	—	—	S
Hoswick	B	—	—	—	—	—

APPENDIX—TABLE I (*Continued*)

District and Name of Creek or Place	Harbour H, Pier P, Anchorage A, Beach or Slipway B	Suitability of Harbour or Pier: At all states of tide F, For part tide only T, for boats of overall lengths 40–55 ft.	30–40 ft.	20–30 ft.	under 20 ft.	Safe in all weathers S, Safe only in fair weather U, Beaches excluded
CK—*(Continued)*						
Stroma Is.	P/A/B	—	—	T	T	U
Scarfskerry	P/A/B	—	F	F	F	U
Ham	H	—	T	T	T	U
Thurso	H	T	T	F	F	S
Scrabster	H	F	F	F	F	S
Brims	H	—	—	T	T	U
Sandside	H	—	T	T	T	S
Portskerra	H	—	—	T	T	U
Strathy	B	—	—	—	—	—
Armadale	B	—	—	—	—	—
Kirtomy	A/B	—	—	—	—	S
Farr	B	—	—	—	—	—
Skerray	A/B	—	—	—	—	S
Skullomie	H	—	—	T	T	U
Tongue	P/B	—	—	T	T	U
Talmine	A/B	—	—	—	—	S
Portvasgo	B	—	—	—	—	—
Eriboll	P/A/B	—	—	T	T	U
Rispond	H	—	T	T	T	S
Durness	B	—	—	—	—	—
CH BROOM						
Droman	P/B	T	T	T	T	U
Loch Clash	H	F	F	F	F	U
Laxford	H	—	—	T	T	S
Port of Tarbet	A/B	—	—	—	—	U
Scourie	A/B	—	—	—	—	U
Badcall	P/A/B	T	T	T	F	S
Drumbeg	A/B	—	—	—	—	S
Culkein	P/B	—	—	T	T	U
Loch Roe	A/B	—	—	—	—	U
Lochinver	P/A	F	F	F	F	S
Inverkirkaig	B	—	—	—	—	—
Badentarbert	P/A/B	F	F	F	F	U
Tanera	P/A/B	T	T	T	T	U
Ullapool	H	T	F	F	F	S
Scorraig	B	—	—	—	—	—
Laide	B	—	—	—	—	—
Aultbea	P/A	F	F	F	F	S
Inverasdale	P/A	—	T	T	T	U
Cove	B	—	—	—	—	—
Melvaig	B	—	—	—	—	—
Gairloch	P/A/B	F	F	F	F	S
Badachro	A/B	—	—	—	—	S
E						
Loch Torridon	P/A/B	T	T	T	T	S
Applecross	P/A/B	—	T	T	T	U
Loch Carron	H	—	—	T	T	S
Lochalsh	H	F	F	F	F	U
Glenelg	P/B	—	T	T	T	U
Skye Is.						
Ardavasar	P/B	T	T	T	F	U
Ornsay	H	—	T	T	T	S
Kyleakin	P/A/B	—	T	T	T	U
Broadford	P/B	F	F	F	F	U
Loch Sligachan	A/B	—	—	—	—	U
Portree	H	F	F	F	F	S
Staffin	B	—	—	—	—	—
Uig	P/A/B	F	F	F	F	U
Loch Snizort	A/B	—	—	—	—	S
Dunvegan	P/A/B	F	F	F	F	S
Glendale	P/A/B	T	T	T	T	U

APPENDIX—TABLE I (*Continued*)

District and Name of Creek or Place	Harbour H Pier P Anchorage A Beach or Slipway B	Suitability of Harbour or Pier At all states of tide F For part tide only T for boats of overall lengths				Safe in all weathers S Safe only in fair weather U Beaches excluded
		40–55 ft.	30–40 ft.	20–30 ft.	under 20 ft.	
KYLE—*(Continued)*						
Bracadale	A/B	—	—	—	—	U
Soay	A/B	—	—	—	—	S
Loch Slapin	A/B	—	—	—	—	S
Loch Eishort	A/B	—	—	—	—	S
Tarskavaig	B	—	—	—	—	—
Raasay Is.	P/A/B	F	F	F	F	U
OBAN						
Mallaig	H	F	F	F	F	S
Arisaig	A/B	—	—	—	—	S
Loch Ailort	P/A	—	—	T	T	S
Moidart	P/A/B	T	T	T	F	S
Ardtoe	P/B	T	T	T	T	U
Kilchoan	P/B	—	—	T	T	U
Salen	P/A/B	—	—	F	F	S
Loch Aline	P/B	F	F	F	F	U
Oban	H	F	F	F	F	S
Canna Is.	H	—	F	F	F	S
Rhum	P/A/B	T	T	T	F	U
Eigg Is.	P/A/B	—	—	T	T	S
„ „	P	F	F	F	F	U
Muck Is.	B	—	—	—	—	—
Coll Is.	P/B	—	—	T	T	U
Tiree Is.	P/A/B	F	F	F	F	U
„ „	H	—	—	F	F	S
Ulva Is.	B	—	—	—	—	—
Iona Is.	P/B	T	F	F	F	U
Mull Is.						
Tobermory	H	F	F	F	F	S
Salen	P/B	—	F	F	F	S
Loch Spelve	P/A	F	F	F	F	S
Lochbuie	A/B	—	—	—	—	U
Bunessan	P/B	T	T	T	T	U
Loch Scridain	A/B	—	—	—	—	S
CAMPBELTOWN						
Colonsay Is.	P/A	—	—	F	F	U
Jura Is.	P/A	—	—	F	F	U
Islay Is.						
Portnahaven	P/A	—	—	F	F	U
Pt. Charlotte	A	—	—	—	—	U
Bruichladdich	P/A	F	F	F	F	U
Port Ellen	H	—	—	F	F	S
Portaskaig	H	—	F	F	F	S
Gigha Is.	P/A/B	F	F	F	F	U
Muasdale	B	—	—	—	—	—
Bellochantuy	B	—	—	—	—	—
Southend	B	—	—	—	—	—
Sanda Is.	P/B	—	—	T	T	U
Campbeltown	H	F	F	F	F	S
Carradale	H	F	F	F	F	S
TARBERT						
Seil Is.	P/A/B	—	F	F	F	S
Luing Is.	P/A/B	T	T	T	F	S
Loch Melfort	P/A/B	—	T	T	T	S
Loch Craignish	P/A/B	—	—	T	T	S
Crinan	H	F	F	F	F	S
Loch Sween	P/A	—	T	T	T	S
Skipness Bay	A/B	—	—	—	—	U
Tarbert	H	F	F	F	F	S
Ardrishaig	H	F	F	F	F	S
Lochgilphead	A/B	—	—	—	—	S

APPENDIX—TABLE I (*Continued*)

District and Name of Creek or Place	Harbour H Pier P Anchorage A Beach or Slipway B	Suitability of Harbour or Pier At all states of tide F For part tide only T for boats of overall lengths				Safe in all weathers S Safe only in fair weather U Beaches excluded
		40–55 ft.	30–40 ft.	20–30 ft.	under 20 ft.	
ETLAND—*(Continued)*						
Sandwick	B	—	—	—	—	—
Lerwick	H	F	F	F	F	S
Unst Is.						
Uyeasound	P/B	F	F	F	F	U
Baltasound	P/A/B	F	F	F	F	S
Haroldswick	P/B	—	T	T	T	U
Yell Is.						
Mid Yell	P/A/B	F	F	F	F	S
Cullivoe	A/B	—	—	—	—	U
Fetlar Is.	P/A/B	T	T	F	F	U
Whalsay Is.	P/A/B	F	F	F	F	U
Bressay Is.	A/B	—	—	—	—	U
Fair Is.	A/B	—	—	—	—	U

APPENDIX—TABLE II

Numbers of creel fishing vessels, fishermen, and landings of lobsters and crabs during 1954.

District and Creek	Creel Fishing Vessels							Fishermen Employed			Landings				
		Inboard Motor				Outboard Motor Sail or H'pulled					Numbers		Values		
	Total	40-55 ft. overall	30-40 ft. overall	20-30 ft. overall	Under 20 ft. overall	20-30 ft. overall	Under 20 ft. overall	Whole Time	Part Time & Crofter	Total	Lobsters	Crabs	£ Lobsters	£ Crabs	£ Total
All Scotland	**676**	**9**	**58**	**225**	**199**	**22**	**163**	**330**	**1,115**	**1,445**	**867,714**	**3,416,038**	**179,800**	**104,190**	**283,990**
East Coast Total	**247**	**2**	**32**	**119**	**88**	**1**	**5**	**237**	**318**	**555**	**365,053**	**3,047,347**	**63,548**	**90,033**	**153,581**
Eyemouth District	**30**	**1**	**8**	**11**	**10**	—	—	**51**	**28**	**79**	**103,980**	**1,043,210**	**17,146**	**31,699**	**48,845**
Burnmouth	11	1	4	5	1	—	—	30	6	36	78,300	760,664	13,479	22,197	35,676
Eyemouth	5	—	—	2	3	—	—	2	6	8	5,630	10,054	814	289	1,103
St. Abbs	14	—	4	4	6	—	—	19	16	35	20,050	272,492	2,853	9,213	12,066
Leith District	**32**	—	**9**	**19**	**3**	—	**1**	**49**	**21**	**70**	**57,226**	**287,471**	**11,596**	**11,101**	**22,697**
Cove	2	—	—	2	—	—	—	5	—	5	6,785	21,775	1,335	707	2,042
Dunbar	15	—	6	7	1	—	1	26	11	37	20,967	239,501	5,117	9,693	14,810
North Berwick	3	—	1	2	—	—	—	5	—	5	8,860	3,545	1,931	113	2,044
Port Seton[1]	1	—	1	—	—	—	—	3	—	3	—	—	—	—	—
Cockenzie[1]	2	—	1	1	—	—	—	4	—	4	—	—	—	—	—
Newhaven[1]	8	—	—	6	2	—	—	4	10	14	19,550	22,650	3,030	588	3,618
Dysart and Wemyss	1	—	—	1	—	—	—	2	—	2	1,064	—	183	—	183
Anstruther District	**32**	—	—	**19**	**13**	—	—	**26**	**22**	**48**	**68,080**	**287,514**	**10,023**	**6,592**	**16,615**
Methil and Leven	4	—	—	4	—	—	—	—	4	4	260	435	47	10	57
Largo	2	—	—	—	2	—	—	—	2	2	412	75	65	2	67
St. Monance	3	—	—	—	3	—	—	—	3	3	3,658	—	483	—	483
Pittenweem	3	—	—	2	1	—	—	—	3	3	4,162	—	544	—	544
Anstruther and Cellardyke	2	—	—	—	2	—	—	—	2	2	3,087	—	400	—	400
Crail	14	—	—	10	4	—	—	26	4	30	55,433	286,478	8,350	6,571	14,921
St. Andrews	4	—	—	3	1	—	—	—	4	4	1,068	526	134	9	143
Montrose District	**24**	—	**5**	**8**	**11**	—	—	**4**	**49**	**53**	**51,351**	**107,490**	**7,919**	**2,677**	**10,596**
Arbroath	7	—	4	3	—	—	—	—	18	18	34,968	18,100	5,332	466	5,798
Auchmithie	4	—	—	—	4	—	—	—	8	8	1,070	—	134	—	134
Ferryden and Montrose	3	—	—	2	1	—	—	—	6	6	1,735	—	357	—	357
Johnshaven	4	—	—	2	2	—	—	4	4	8	8,250	37,040	1,225	897	2,122
Gourdon	6	—	1	1	4	—	—	—	13	13	5,328	52,350	871	1,314	2,185
Aberdeen District	**10**	—	—	**5**	**5**	—	—	—	**26**	**26**	**4,138**	**55,417**	**797**	**1,930**	**2,727**
Catterline	3	—	—	1	2	—	—	—	8	8	942	24,085	172	904	1,076
Stonehaven	5	—	—	4	1	—	—	—	14	14	2,717	28,950	513	937	1,450
Cove	2	—	—	—	2	—	—	—	4	4	479	2,382	112	89	201
Peterhead District	**13**	—	—	**8**	**5**	—	—	**16**	**10**	**26**	**5,014**	**108,080**	**1,174**	**3,687**	**4,861**
Boddam	10	—	—	5	5	—	—	10	10	20	3,264	97,180	710	3,262	3,972
[illegible]	[illegible]							[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Fraserburgh District	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
St. Combs and Charleston	2	—	—	—	2	—	—	—	5	5	870	2,600	202	59	261	
Inverallochy and Cairnbulg	1	—	1	—	—	—	—	—	2	2	300	2,100	73	48	121	
Fraserburgh	15	—	7	8	—	—	—	22	13	35	6,165	616,180	1,386	15,923	17,309	
Sandhaven and Pitullie	1	—	—	1	—	—	—	—	3	3	1,036	1,990	208	66	274	
Rosehearty	2	—	—	2	—	—	—	—	5	5	1,995	—	402	—	402	
Pennan	1	—	—	1	—	—	—	—	2	2	1,181	—	233	—	233	
Macduff District	**8**	—	—	**3**	**5**	—	—	—	**21**	**21**	**5,983**	**38,700**	**1,323**	**1,447**	**2,770**	
Gardenstown[2]	3	—	—	2	1	—	—	—	7	7	3,123	170	616	6	622	
Macduff[2]	—	—	—	—	—	—	—	—	—	—	760	20,530	187	806	993	
Whitehills	1	—	—	—	1	—	—	—	3	3	—	2,130	—	72	72	
Portsoy	3	—	—	1	2	—	—	—	8	8	1,580	15,640	384	555	939	
Sandend	1	—	—	—	1	—	—	—	3	3	520	230	136	8	144	
Buckie District	**7**	—	—	**2**	**3**	—	**2**	—	**10**	**10**	**7,160**	**1,400**	**1,221**	**36**	**1,257**	
Buckie[3]	5	—	—	1	2	—	2	—	6	6	7,160	1,400	1,221	36	1,257	
Portgordon[3]	2	—	—	1	1	—	—	—	4	4	—	—	—	—	—	
Lossiemouth District	**15**	—	—	**8**	**7**	—	—	**5**	**19**	**24**	**10,628**	**2,435**	**1,492**	**58**	**1,550**	
Lossiemouth	4	—	—	2	2	—	—	—	8	8	1,771	1,558	251	36	287	
Hopeman	7	—	—	2	5	—	—	3	5	8	6,277	40	866	1	867	
Burghead	1	—	—	1	—	—	—	—	2	2	470	—	63	—	63	
Nairn	3	—	—	3	—	—	—	2	4	6	2,110	837	312	21	333	
Helmsdale District	**13**	—	—	**5**	**8**	—	—	**24**	**2**	**26**	**8,154**	**884**	**1,513**	**24**	**1,537**	
Cromarty	1	—	—	—	1	—	—	2	—	2	270	—	52	—	52	
Golspie	1	—	—	—	1	—	—	2	—	2	948	—	183	—	183	
Brora	2	—	—	—	2	—	—	2	2	4	1,545	—	286	—	286	
Helmsdale	6	—	—	5	1	—	—	12	—	12	4,091	884	757	24	781	
Dunbeath	3	—	—	—	3	—	—	6	—	6	1,300	—	235	—	235	
Wick District	**41**	**1**	**2**	**19**	**16**	**1**	**2**	**40**	**80**	**120**	**31,792**	**491,876**	**6,840**	**14,686**	**21,526**	
Latheronwheel	1	—	—	—	1	—	—	2	—	2	1,500	—	280	—	280	
Lybster	1	—	—	1	—	—	—	2	—	2	1,773	580	351	16	367	
Wick	4	1	1	2	—	—	—	8	1	9	2,669	100,811	515	3,020	3,535	
Ackergill	1	—	—	—	1	—	—	1	—	1	1,650	1,500	347	45	392	
Keiss and Nybster	6	—	1	5	—	—	—	21	—	21	3,283	342,180	815	10,251	11,066	
Stroma	8	—	—	4	4	—	—	—	21	21	2,810	—	578	—	578	
Duncansby and Huna	3	—	—	3	—	—	—	—	15	15	2,440	3,100	437	76	513	
Scarfskerry and Ham	5	—	—	—	4	—	1	1	8	9	3,825	1,680	641	42	683	
Thurso and Scrabster	3	—	—	1	2	—	—	5	—	5	4,660	41,015	1,017	1,211	2,228	
Portskerra, Armadale and Strathy Point	3	—	—	2	—	—	1	—	17	17	1,566	—	393	—	393	
Skerry and Skullomie	2	—	—	—	2	—	—	—	7	7	1,416	1,010	475	25	500	
Talmine and Portvasgo	1	—	—	—	—	1	—	—	5	5	500	—	153	—	153	
Eriboll and Rispond	3	—	—	1	2	—	—	—	6	6	3,700	—	838	—	838	
West Coast Total	**253**	**7**	**23**	**71**	**47**	**16**	**89**	**67**	**514**	**581**	**348,184**	**365*m*601**	**81,911**	**14,092**	**96,003**	
Loch Broom District	**27**	—	**2**	**4**	**4**	—	**17**	—	**55**	**55**	**27,252**	**2,000**	**5,740**	**65**	**5,805**	
Cape Wrath to Laxford	4	—	—	—	1	—	3	—	9	9	6,138	—	1,186	—	1,186	
Laxford to Badcall	3	—	—	—	2	—	1	—	7	7	1,923	—	482	—	482	
Badcall to Drumbeg	2	—	—	1	1	—	—	—	6	6	6,145	—	1,695	—	1,695	
Drumbeg to Culkein	3	—	—	—	—	—	3	—	7	7	2,665	—	568	—	568	
Culkein to Inverpolly	2	—	—	1	—	—	1	—	3	3	2,724	—	543	—	543	

[1] Boats from Port Seton and Cockenzie land at Newhaven.
[2] Boats from Gardenstown land also at Macduff.
[3] Boats from Portgordon land at Buckie.

APPENDIX—TABLE II (*Continued*)

District and Creek	Creel Fishing Vessels							Fishermen Employed			Landings				
		Inboard Motor				Outboard Motor Sail or H'pulled					Numbers		Values		
	Total	40-55 ft. overall	30-40 ft. overall	20-30 ft. overall	Under 20 ft. overall	20-30 ft. overall	Under 20 ft. overall	Whole Time	Part Time & Crofter	Total	Lobsters	Crabs	£ Lobsters	£ Crabs	£ Total
Loch Broom District—*(Continued)*															
Coigach and Tanera	2	—	—	1	—	—	1	—	3	3	940	2,000	170	65	235
Loch Broom	1	—	1	—	—	—	—	—	3	3	1,360	—	230	—	230
Achmore and Little Loch Broom	1	—	—	—	—	—	1	—	2	2	339	—	62	—	62
Cruinard to Aultbea	3	—	—	—	—	—	3	—	5	5	1,168	—	184	—	184
Melvaig to Red Point	6	—	1	1	—	—	4	—	10	10	3,850	—	620	—	620
Kyle District	**26**	**3**	**5**	**9**	**2**	—	**7**	**9**	**49**	**58**	**19,600**	**83,331**	**3,720**	**2,393**	**6,113**
Loch Torridon	2	—	—	—	—	—	2	—	2	2	491	—	93	—	93
Loch Carron[1]	3	—	2	—	—	—	1	4	1	5	386	42,954	73	1,138	1,211
Lochalsh[1,2]	3	1	—	2	—	—	—	3	5	8	7,803	39,767	1,471	1,234	2,705
Sleat	1	—	1	—	—	—	—	—	3	3	1,827	—	273	—	273
Kyleakin to Scalpay[2]	3	2	1	—	—	—	—	2	9	11	50	610	11	21	32
Portree	2	—	—	1	1	—	—	—	4	4	256	—	80	—	80
Loch Snizort	1	—	—	1	—	—	—	—	2	2	215	—	81	—	81
Waternish and Dunvegan	5	—	—	1	1	—	3	—	9	9	7,497	—	1,430	—	1,430
Glendale and Bracadale	4	—	1	2	—	—	1	—	10	10	840	—	163	—	163
Lochs Slapin and Eyeshort	2	—	—	2	—	—	—	—	4	4	235	—	45	—	45
Oban District	**25**	**3**	**6**	**5**	**7**	—	**4**	**30**	**27**	**57**	**123,029**	**278,760**	**34,779**	**11,600**	**46,379**
Mallaig	11	2	6	1	2	—	—	26	4	30	100,904	278,760	28,222	11,600	39,822
Arisaig	2	—	—	1	1	—	—	—	3	3	900	—	225	—	225
Oban[3]	1	1	—	—	—	—	—	4	—	4	12,268	—	4,277	—	4,277
Coll	4	—	—	1	1	—	2	—	6	6	3,775	—	924	—	924
Tiree	3	—	—	1	1	—	1	—	6	6	1,402	—	347	—	347
Canna	2	—	—	1	1	—	—	—	4	4	1,660	—	374	—	374
Rhum, Muck and Eigg	2	—	—	—	1	—	1	—	4	4	2,120	—	410	—	410
Campbeltown District	**27**	—	—	**12**	**1**	—	**14**	**20**	**15**	**35**	**26,049**	—	**4,634**	—	**4,634**
Southend	2	—	—	1	—	—	1	2	1	3	1,524	—	211	—	211
Muasdale and Bellochantuy	4	—	—	—	1	—	3	3	2	5	7,158	—	1,197	—	1,197
Gigha	5	—	—	2	—	—	3	3	3	6	4,299	—	649	—	649
Port Ellen, Islay	6	—	—	3	—	—	3	4	3	7	6,246	—	1,179	—	1,179
Portaskaig, Islay	4	—	—	2	—	—	2	3	3	6	2,784	—	581	—	581
Bruichladdich, Islay	3	—	—	3	—	—	—	3	1	4	2,507	—	584	—	584
Island of Colonsay	3	—	—	1	—	—	2	2	2	4	1,531	—	233	—	233
Tarbert District	**14**	—	—	**6**	**8**	—	—	—	**26**	**26**	**11,769**	—	**3,118**	—	**3,118**
Luing	6	—	—	—	6	—	—	—	11	11	1,365	—	356	—	356
Tarbert	2	—	—	1	1	—	—	—	3	3	4,260	—	1,191	—	1,191
Ardrishaig	5	—	—	5	—	—	—	—	10	10	1,980	—	510	—	510
Crinan	1	—	—	—	1	—	—	—	2	2	1,080	—	370	—	370
Lamlash[4]	—	—	—	—	—	—	—	—	—	—	3,054	—	691	—	691

Ayr	2	—	—	—	2	—	—	—	—	4	4	580	—	76	—	76
Dunure	1	—	—	1	—	—	—	—	—	2	2	300	—	35	—	35
Girvan	3	—	—	3	—	—	—	—	—	6	6	790	—	102	—	102
Portpatrick	1	—	—	—	—	—	1	—	—	2	2	350	150	46	3	49
Portwilliam	6	—	—	3	—	3	—	8	—	2	10	6,000	—	750	—	750
Isle of Whithorn	3	—	—	—	—	—	3	—	—	4	4	3,250	1,200	401	24	425
Garlieston	2	—	—	—	1	—	1	—	—	3	3	1,350	—	160	—	160
Kirkcudbright	5	—	—	—	—	5	—	—	—	8	8	670	—	112	—	112
Stornoway District	**80**	**1**	**6**	**15**	**10**	**8**	**40**	—	**243**	**243**	**54,511**	—	**10,486**	—	**10,486**
South Lochs	12	—	—	4	2	—	6	—	30	30	2,114	—	547	—	547
North Lochs	5	—	—	1	—	—	4	—	17	17	1,829	—	305	—	305
Garrabost	2	—	—	—	—	—	2	—	4	4	2,950	—	888	—	888
Portnaguran	4	—	—	—	—	2	2	—	10	10	780	—	257	—	257
Shawbost[5]	2	—	—	—	—	—	2	—	5	5	—	—	—	—	—
Carloway	4	—	—	—	—	—	4	—	12	12	60	—	15	—	15
Bernera[5]	8	—	1	3	—	2	2	—	22	22	21,258	—	3,618	—	3,618
Valtos[5]	3	—	—	—	—	2	1	—	12	12	—	—	—	—	—
North Harris	15	—	1	4	3	—	7	—	51	51	5,378	—	1,293	—	1,293
Scalpay	11	1	1	2	3	—	4	—	30	30	2,408	—	537	—	537
South Harris	14	—	3	1	2	2	6	—	50	50	17,734	—	3,026	—	3,026
Barra District	**31**	—	**4**	**13**	**12**	—	**2**	—	**68**	**68**	**72,684**	**160**	**17,752**	**7**	**17,759**
Berneray	4	—	1	3	—	—	—	—	12	12	18,360	—	4,960	—	4,960
North Uist and Benbecula	12	—	2	5	3	—	2	—	26	26	31,236	—	7,221	—	7,221
Lochcarnan	3	—	—	—	3	—	—	—	6	6	3,856	—	715	—	715
Lochskiport	1	—	—	—	1	—	—	—	1	1	372	—	91	—	91
Lochboisdale	7	—	—	2	5	—	—	—	14	14	13,367	—	3,288	—	3,288
Eriskay	1	—	—	1	—	—	—	—	3	3	478	160	142	7	149
Barra	3	—	1	2	—	—	—	—	6	6	5,015	—	1,335	—	1,335
Orkney and Shetland Total	**176**	—	**3**	**35**	**64**	**5**	**69**	**26**	**283**	**309**	**154,477**	**3,090**	**34,341**	**65**	**34,406**
Orkney District	**157**	—	**2**	**29**	**60**	**3**	**63**	**16**	**260**	**276**	**136,630**	**3,090**	**28,909**	**65**	**28,974**
Sanday and North Ronaldsay	29	—	—	2	1	1	25	—	54	54	22,274	—	4,370	—	4,370
Westray and Papa Westray	18	—	—	5	6	—	7	—	33	33	19,179	—	3,863	—	3,863
Eday and Pharay	14	—	—	4	6	—	4	—	28	28	15,495	—	2,826	—	2,826
Stronsay	10	—	—	2	3	—	5	—	21	21	5,324	—	1,091	—	1,091
Shapinsay and Rousay, etc.	11	—	—	3	4	—	4	—	18	18	6,525	—	1,699	—	1,699
Evie and Birsay	5	—	—	—	2	—	3	—	9	9	2,313	—	434	—	434
Kirkwall	8	—	—	2	2	—	4	2	12	14	12,706	600	3,330	12	3,342
Deerness and Tankerness	8	—	—	2	4	1	1	—	14	14	7,243	—	1,434	—	1,434
Holm	4	—	—	—	3	—	1	—	7	7	1,938	—	409	—	409
Burray	9	—	—	2	6	—	1	—	10	10	2,512	—	481	—	481
Orphir and Scapa	2	—	—	1	1	—	—	—	3	3	324	—	77	—	77
Stromness	11	—	1	1	8	—	1	8	5	13	16,780	2,490	3,674	53	3,727
Hoy and Graemsay	7	—	—	1	3	—	3	—	13	13	6,695	—	1,398	—	1,398
Walls and Flotta	9	—	1	2	4	1	1	6	11	17	11,604	—	2,678	—	2,678
South Ronaldsay	12	—	—	2	7	—	3	—	22	22	5,718	—	1,145	—	1,145

[1] Boats from Loch Carron land also at Lochalsh.
[2] Boats from Kyleakin to Scalpay land mainly at Lochalsh but also at Mallaig (Oban District).
[3] Landings at Oban largely attributable to stranger vessels including craft from Kyleakin to Scalpay (Kyle District).
[4] Landings at Lamlash entirely attributable to stranger vessels fishing local grounds.
[5] Boats from Shawbost and Valtos land at Bernera.

APPENDIX—TABLE II—(*Continued*)

District and Creek	Creel Fishing Vessels							Fishermen Employed			Landings				
	Total	Inboard Motor				Outboard Motor Sail or H'pulled					Numbers		Values		
		40-55 ft. overall	30-40 ft. overall	20-30 ft. overall	Under 20 ft. overall	20-30 ft. overall	Under 20 ft. overall	Whole Time	Part Time & Crofter	Total	Lobsters	Crabs	£ Lobsters	£ Crabs	£ Total
Shetland District	**19**	—	**1**	**6**	**4**	**2**	**6**	**10**	**23**	**33**	**17,847**	—	**5,432**	—	**5,432**
Dunrossness and Fair Isle	2	—	—	—	1	—	1	2	1	3	2,022	—	678	—	678
Sandsair and Aithsvoe	1	—	—	—	—	—	1	—	1	1	31	—	7	—	7
Lerwick and Bressay	2	—	—	—	2	—	—	—	3	3	556	—	137	—	137
Whalsay and Skerries	1	—	—	—	—	—	1	—	2	2	150	—	37	—	37
Uyeasound	1	—	—	1	—	—	—	—	1	1	765	—	189	—	189
Ronasvoe and Hillswick	1	—	—	—	—	—	1	—	2	2	151	—	40	—	40
Walls, Sandness and Foula	4	—	1	2	1	—	—	4	4	8	4,610	—	1,379	—	1,379
Scalloway and Isles	7	—	—	3	—	2	2	4	9	13	9,562	—	2,965	—	2,965

APPENDIX TABLE III

Landings of lobsters in each of the Scottish Fishery Districts, numbers by months, averaged over the period 1950-54, inclusive

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Scotland	**24,656**	**23,093**	**33,956**	**52,329**	**85,622**	**88,298**	**99,450**	**178,272**	**174,189**	**110,618**	**57,647**	**37,859**	**965,989**
Coast	**7,547**	**7,236**	**16,243**	**28,333**	**29,814**	**21,684**	**24,042**	**80,994**	**81,872**	**47,211**	**18,727**	**10,961**	**374,664**
emouth	1,612	1,475	3,181	5,140	4,303	2,148	3,029	18,889	21,906	14,304	7,329	3,327	86,643
ith .	2,272	2,282	4,373	4,033	6,604	6,034	7,088	14,675	12,652	8,824	3,959	2,441	75,237
nstruther	181	164	1,025	3,339	2,090	1,182	3,381	22,438	21,433	5,465	875	269	61,842
ontrose	19	144	3,099	8,894	6,916	3,114	590	9,483	9,780	6,839	917	152	49,947
berdeen	—	—	57	360	628	487	225	609	846	329	193	10	3,744
terhead	—	90	547	1,645	1,582	208	180	395	1,231	534	—	—	6,412
aserburgh	428	240	726	798	1,078	807	668	1,434	3,077	2,784	779	511	13,330
acduff	254	287	167	176	45	20	92	90	623	1,354	1,198	484	4,790
ckie .	72	100	128	129	308	303	645	1,145	1,142	926	270	90	5,258
ssiemouth	601	367	495	597	500	378	1,004	3,170	2,231	1,948	843	537	12,671
lmsdale	817	847	1,000	1,411	841	1,068	843	1,733	2,068	980	436	899	12,943
ick .	1,291	1,240	1,445	1,811	4,919	5,935	6,297	6,933	4,883	2,924	1,928	2,241	41,847
Coast	**13,852**	**13,670**	**14,259**	**18,234**	**30,828**	**37,731**	**53,008**	**67,536**	**61,826**	**41,394**	**28,639**	**21,033**	**402,010**
ch Broom	3,148	2,963	2,673	2,180	2,180	1,152	1,133	1,752	2,400	2,973	4,561	3,461	30,576
dle .	1,448	1,418	1,149	1,095	2,342	2,112	4,024	4,925	3,737	2,614	1,944	851	27,659
oan .	250	280	1,421	7,056	10,775	14,354	18,664	23,231	20,989	15,104	7,636	3,038	122,798
mpbeltown	108	332	519	699	2,681	3,438	4,784	4,470	7,835	2,669	1,258	1,448	30,241
rbert .	454	468	400	462	452	808	1,288	1,937	1,920	1,357	793	559	10,898
r .	176	81	197	605	973	1,361	2,815	3,760	1,782	769	504	129	13,152
rnoway	4,695	4,176	4,138	2,759	5,807	3,178	2,373	6,400	7,371	7,106	6,382	6,010	60,395
rra .	3,573	3,952	3,762	3,378	5,618	11,328	17,927	21,061	15,792	8,802	5,561	5,537	106,291
ey and Shetland	**3,257**	**2,187**	**3,454**	**5,762**	**24,980**	**28,883**	**22,400**	**29,742**	**30,491**	**22,013**	**10,281**	**5,865**	**189,315**
kney .	2,237	1,301	2,172	3,968	21,806	25,687	19,125	26,996	28,564	19,771	8,289	4,118	164,034
etland	1,020	886	1,282	1,794	3,174	3,196	3,275	2,746	1,927	2,242	1,992	1,747	25,281

APPENDIX TABLE IV

Landings of crabs in the Districts of the Scottish east coast, numbers by months, averaged over the period 1950-54, inclusive

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Coast	**145,022**	**112,151**	**179,126**	**246,333**	**368,569**	**384,698**	**354,072**	**297,774**	**241,232**	**201,733**	**131,242**	**136,373**	**2,798,325**
emouth	81,537	67,879	98,487	102,708	120,880	104,286	95,189	68,720	59,534	61,810	47,666	66,622	975,318
th .	11,976	14,209	26,443	33,636	47,948	36,299	35,867	15,102	18,880	18,779	6,998	13,134	279,271
struther	20,798	10,430	16,971	30,477	55,463	65,932	31,423	7,647	9,173	12,159	17,862	18,323	296,658
ntrose	1,280	2,110	5,104	10,082	20,029	19,141	11,472	9,720	9,770	4,690	1,814	940	96,152
erdeen	870	530	3,098	5,054	11,055	8,677	7,877	7,788	7,048	3,315	2,308	1,055	58,675
erhead	8	240	158	959	6,256	10,764	19,808	22,386	10,868	6,092	1,486	500	79,525
serburgh	13,320	9,210	23,840	50,590	79,940	94,814	84,730	98,880	71,286	42,634	12,560	7,700	589,504
ff .	—	—	—	84	640	2,100	6,990	9,790	4,316	4,632	4,040	1,264	33,856
ckie .	64	40	—	100	1,649	1,099	1,204	1,050	814	499	84	—	6,603
ssiemouth	—	—	—	38	46	544	752	228	145	32	—	—	1,785
lmsdale	71	26	43	17	64	241	122	88	179	90	25	29	995
ck .	15,098	7,477	4,982	12,588	24,599	40,801	58,638	56,375	49,219	47,001	36,399	26,806	379,983

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